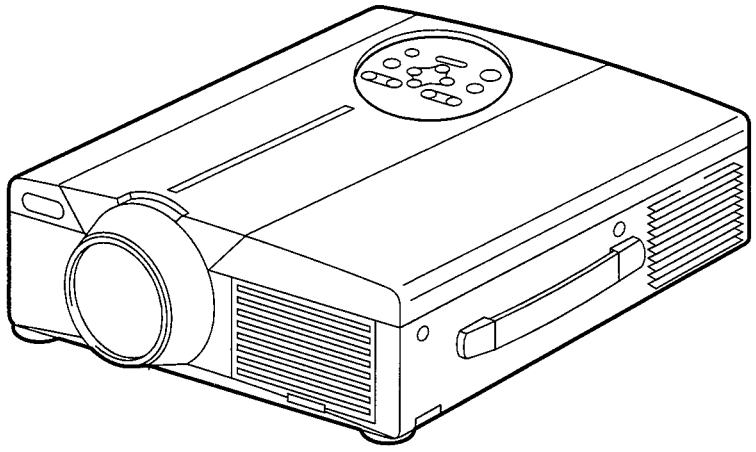
HITACHI

YK | No. 0496E

SERVICE MANUAL

CP-S860W
CP-S860E



Caution

Be sure to read this manual before servicing. To assure safety from fire, electric shock, injury, harmful radiation and materials, various measures are provided in this Hitachi liquid crystal projector. Be sure to read cautionary items described in the manual to maintain safety before servicing.

Service Warning

1. When replace the lamp, to avoid burns to your fingers. The lamp becomes too hot.
2. Never touch the lamp bulb with a finger or anything else. Never drop it or give it a shock. They may cause bursting of the bulb.
3. This projector is provided with a high voltage circuit for the lamp. Do not touch the electric parts of power unit (main), when turn on the projector.
4. Do not touch the exhaust fan, during operation.
5. The LCD module ass'y is likely to be damaged. If replacing to the LCD module ass'y, do not hold the FPC of the LCD module ass'y.

Contents

1. Features 2
2. Specifications 2
3. Names of each part 3
4. Adjustment 9
5. Troubleshooting 12
6. Service points 19
7. Block diagram 21
8. Wiring diagram 22
9. Basic circuit diagram 24
10. Connector connection diagram 46
11. Disassembly diagram 47
12. Replacement parts list 49

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT.

Liquid Crystal Projector

August 1999 Digital Media Systems Division

1. Features

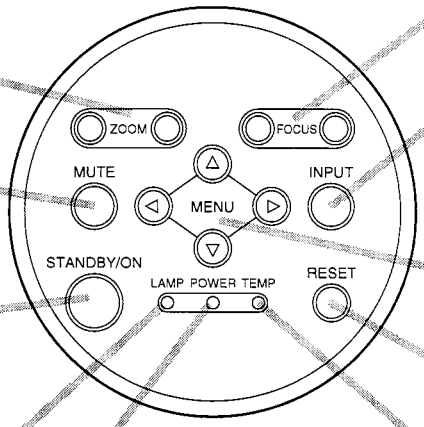
- High brightness, High resolution
- Compact size, light weight for portability
- RGB output terminal
- RS232C Communication
- Mouse emulation
- Power zoom and power focus functions
- Complies with VESA DDC1/2B specifications
- Auto-adjustment function

2. Specifications

Liquid crystal panel	Drive system	TFT active matrix
	Panel size	1.3 inches
	Number of pixels	800 (H) x 600 (V)
Lamp		190W UHB
Video input	System	NTSC , 4.43NTSC , PAL , M-PAL , or SECAM (N-PAL : only compulsion mode)
	Level	Composite 1.0Vp-p (75Ω termination) Y/C Y : 1.0Vp-p (75Ω termination) C : 0.286Vp-p (NTSC burst signal, 75Ω termination) 0.3Vp-p (PAL/SECAM burst signal, 75Ω termination)
RGB input / output	Video signal	Analog RGB input 0.7Vp-p (75Ω termination)
	Sync signal	H/V separate TTL level
Audio	Input	200mVrms, 20kΩ or less
	Output	0~200mVrms, 1kΩ
Speaker output		1.2W + 1.2W (stereo)
Power supply		AC100~120V/3.7A,AC220~240V/1.5A
Power consumption		320W
Dimensions		289 (W) x 124 (H) x 345 (D) mm
Weight		5.9kg (13lbs)
Temperature range		Operation : 0~35°C Storage : -20~60°C
Accessories		Remote control ..... 1 POWER cord ..... 3(CP-S860W) 2(CP-S860E) BATTERIES LR6 ..... 2 RGB cable ..... 1 Mac adapter ..... 1 Video/Audio cable ..... 1 Mouse cable 3

3. Names of each part

● Main unit



ZOOM button
Used to adjust the size of the image.

MUTE button
This button turns the sound on and off. Press once to turn the sound off; then press again to turn the sound back on.

STANDBY / ON button
Press this button to turn the power on and off. When turned off, the projector enters standby status.

LAMP indicator
This lamp lights or blinks when the lamp is off.

ON indicator
This indicator lights or blinks during standby and during operation.

FOCUS button
Used to adjust the focus of the image on the screen.

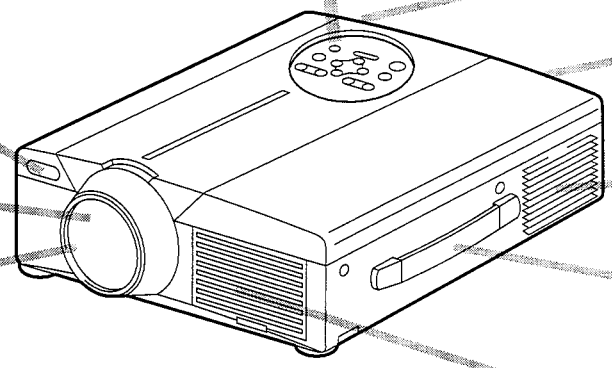
INPUT button
Press this button to switch the input. The input changes in the following sequence each time this button is pressed.

RGB1 → RGB2 → VIDEO

MENU button
Displays the image menu.

RESET button
Used to reset the initial settings.

TEMP indicator
This indicator lights or blinks when the internal temperature of the projector rises and when the fan malfunctions.



Speaker

Speaker

Remote control photoreceptor

Lens

Lens cap

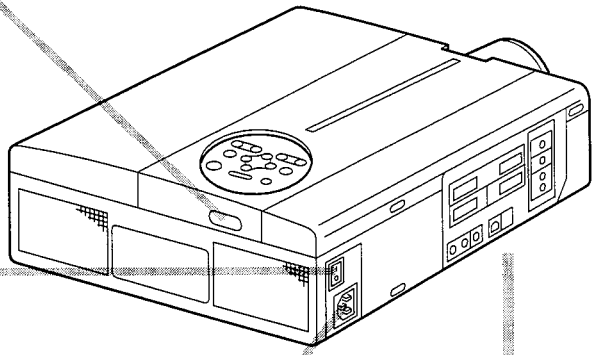
Cooling fan
(exhaust side)

Handle

Cooling fan
(intake side)

• Use the remote control in front of the remote control photoreceptor at a distance of about 5 m or less and an angle of 30 degrees to the left or right of the center.

Remote control photoreceptor

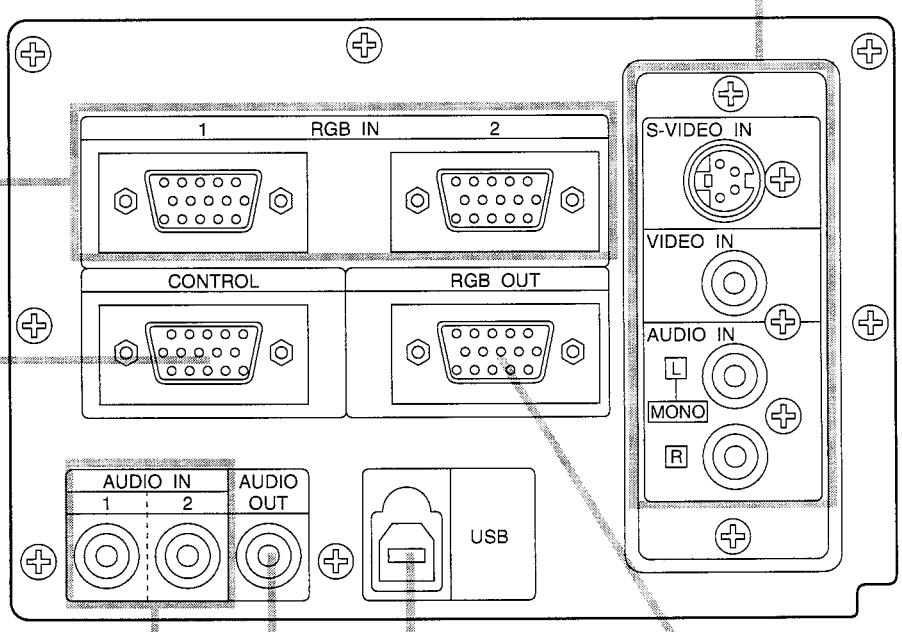


Main power switch
Used to turn the power on and off.
O OFF
| ON

AC IN jack
Used to connect the accessory power cord.

⚠Caution **Connecting to the AC IN jack**
Make sure the accessory power cord is plugged into the AC IN jack as far as it will go. Incomplete connection can result in fire or electrical shock.

VIDEO IN jack
S-VIDEO IN jack
Mini DIN 4-pin connector
VIDEO IN jack
RCA jack
AUDIO L/R IN jack
RCA jack



RGB IN jack
D-sub 15-pin shrink (1/2)

CONTROL jack
D-sub 15-pin shrink

AUDIO IN jack
Stereo mini-pin jack

USB jack
The mouse cursor can be controlled by remote control by connecting to a personal computer.

RGB OUT jack
D-sub 15-pin shrink

AUDIO OUT jack (RGB/VIDEO)
Stereo mini-pin jack

● Remote control transmitter

VIDEO, RGB button
Press to switch the input.

STANDBY / ON button
Used to turn the power on and off.
Press for 1 sec. or more to turn the power off (enter standby status).

DISK PAD
(1) Used to select menu items when the menu screen is displayed
(2) When the menu is not displayed, the mouse shift function and left click function are active.
(3) After the POSITION ON button has been pressed, the screen can be moved upward, downward and to the left and right.

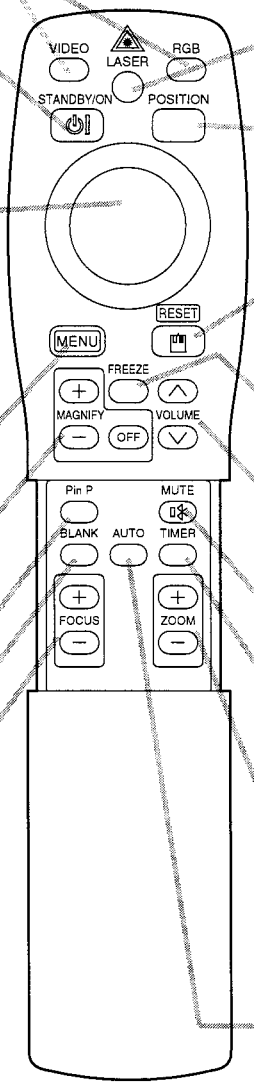
MENU button
Used to turn the menu screen display on and off.

MAGNIFY button
Used to magnify the displayed image.

Pin P button
Used to turn Pin P (Picture In Picture: displays small video signal images in the RGB signal) on and off.

BLANK button
Used to turn blanking on and off.

FOCUS button
Used to adjust the focus of the image on the screen.



LASER button
Turns the laser beam on and off.

POSITION button
Pressing the top, bottom, left or right of Disk Pad after pressing this button causes corresponding movement (effective only for RGB signal output).

RESET MOUSE / RIGHT button
Operates as the RESET button when the menu is displayed. Press this button to return to the initial settings.
Used to click the right mouse button when the menu is not displayed.

FREEZE button
Used to turn the freeze (still) image display on and off.

VOLUME button
Adjusts the volume of the sound. Press [∧] to increase the volume and (∨) to decrease the volume.

MUTE button
Mutes the sound when pressed and restores the sound when pressed again.

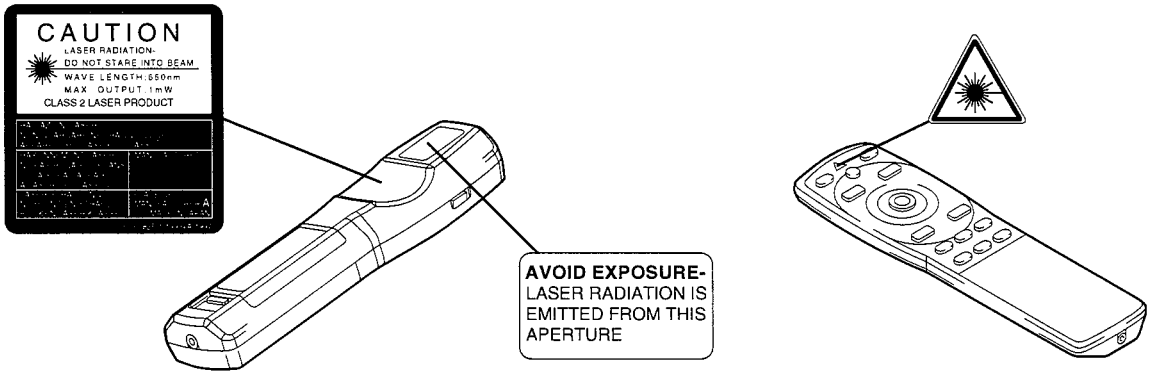
TIMER button
Turns the time display of the timer displayed on the menu screen on and off.
The timer is not displayed during blanking.

ZOOM button
Used to adjust the size of the image.

AUTO button
Used to execute auto-adjust.

⚠ Warning

The laser pointer of the remote control is used in place of a finger or rod. Never look directly into the laser beam outlet or point the laser beam at other people. The laser beam can cause vision problems.



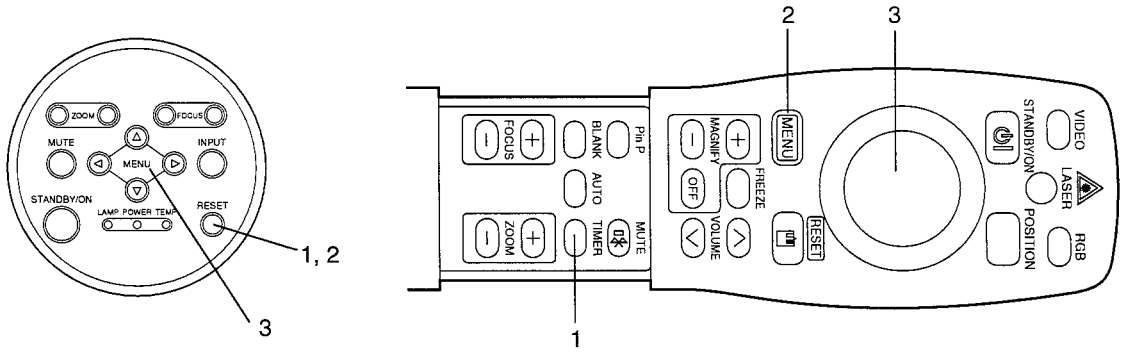
Function for service

Function	Operation
Displayed the operating time of the lamp	Press the RESET button of the projector or the TIMER button of the remote control, for 3 seconds.
Reset the operating time of the lamp	Press the RESET button of the projector or the remote control MENU, for 3 seconds. (During be displayed the operating time of the lamp.)
Displayed the operating time of the projector	Press the MUTE button of the projector or the remote control, for 3 seconds. (During be displayed the operating time of the lamp.)

When replacing the lamp, Reset the operating time of lamp.

Reset the lamp timer :

Please carry out the following operation within 10 minutes from power on, if you replaced the lamp after 2,000 hours.



1) Press the RESET button on projector for 3 seconds or remote control TIMER button for 3 seconds and display the total lamp used time.
2) Press the RESET button on projector or remote control MENU ON button during displaying the lamp used time.
3) Select the "0" on the screen using the MENU (◀) button or DISK PAD.

LAMP 1700 hr

LAMP 1700 □→0 ■CANCEL

Message table

On-screen display

The following messages are displayed on the screen.

"CHANGE THE LAMP" "AFTER REPLACING LAMP, RESET THE LAMP TIMER"	Lamp has 1,700 hours on it and may need to be changed.
"CHANGE THE LAMP" "AFTER REPLACING LAMP, RESET THE LAMP TIMER" "THE POWER WILL TURN OFF AFTER 20 Hr."	Lamp has 1,979 hours on it. See P.6 "Reset the lamp timer"
Blinking of "CHANGE THE LAMP" "AFTER REPLACING LAMP, RESET THE LAMP TIMER" "THE POWER WILL TURN OFF AFTER 0 Hr."	When the lamp has 2,000 hours or more on it, the message will blink, and the power will turns off after 10 minutes.
"NO INPUT IS DETECTED"	Signal is not input.
"SYNC IS OUT OF RANGE"	The horizontal or vertical frequency of the input signal exceeds the range of the projector, it cannot be displayed.

Indicator display

The ON indicator, LAMP indicator and TEMP indicator will light or blink in the following cases.

ON indicator	LAMP indicator	TEMP indicator	Meaning	Remedy
Lights orange	Goes off	Goes off	Standby mode	————
Blinks green	Goes off	Goes off	During warming up	————
Lights green	Goes off	Goes off	During operation	————
Blinks orange	Goes off	Goes off	During cooling down	————
Lights red	Lights red	Goes off	Lamp cannot light	Cool projector by power off for 60 minutes. If the indicator is still lit, lamp may be defective. Replace.
Lights red	Blinks red	Goes off	Lamp is not inserted	Securely insert the lamp.
Lights red	Goes off	Blinks red	Cooling fan accidented	Replace fan.
Blinks red	Blinks red	Goes off	Accumulated lamp operation time has exceeded 2,000 hours	Replace lamp and reset the accumulated lamp operation time.

When inside temperature becomes high, to protect the projector, the lamp may be turned off and the lamp indicator lights red, or the projector will be shut down and the all indicator display goes off.

4. Adjustment

4 - 1 Before adjusting

1. Before starting adjustment, warm up the projector for about 10 min.
2. Set Zoom Wide to Max. and project an image a distance of 40 inches.
3. Normalizing the video adjustment.
   (Press the MENU button of the remote controller to display the Video menu, then press the RESET button.)
4. Perform all adjustments from the Adjustment menu.
   Perform the following operations to display the Adjustment menu.
   a. Press the MENU button of the remote controller (the Video menu will appear).
   b. Next, press the RESET button for 5 sec. or more (the Adjustment menu will appear).

4 - 2 S/H timing adjustment

Adjustment preparations

1. Use the SVGA VESA (60) timing signal to input a 0.7Vp-p cross hatch signal.
2. Use H.PHASE in the Video menu to adjust until the cross hatch vertical stripes are most clearly visible.
3. Reset S/H.
   Position the cursor on S/H in the Adjustment Menu and then press the RESET key.

Adjustment procedure

1. Use S/H - S/H Timing in the Adjustment menu to adjust until the cross hatch vertical stripes are most clearly visible.
2. Next, check whether or not vertical jitter is within the range of -16 < A < +16 at the value resulting from the adjustment in item 1.
3. If there is jitter, change S/H - S/H POL in the Adjustment menu (change NEGA to POSI and POSI to NEGA).
4. Finally, return S/H - S/H TIMING in the Adjustment menu to the value in item 1.

4 - 3 SUB POSITION adjustment

Adjustment preparations

1. Make this adjustment after completing the adjustment in "4-2 S/H Timing adjustment".
2. Use the SVGA VESA (60) timing signal to input a 0.7Vp-p cross hatch signal.
3. Press the AUTO button of the remote controller.

Adjustment procedure

1. Use the SVGA VESA (60) timing signal to input a 0.7Vp-p frame signal.
2. Use S/H - SUB POSITION in the Adjustment menu to adjust so that the left and right frames are displayed.
   Caution: The frame is displayed in three steps at this stage, but adjust to the center step; otherwise, colors may appear in the vertical stripes in some cases.

4 - 4 Ghost adjustment

Adjustment preparations

1. Make this adjustment after completing the adjustment in "4-3 SUB POSITION adjustment".
2. Use the SVGA VESA (60) timing signal to input a 0.7Vp-p cross hatch signal.
3. Use H.PHASE in the Video menu to adjust until the cross hatch vertical stripes are most clearly visible.

Adjustment procedure

1. Display the R primary color signal and then use S/H - GHOST-R: in the Adjustment menu to adjust so that R color ghost is at a minimum.
2. (If ghosts appear on the right side of the vertical stripes because the adjustment value is too large, return two steps.)
3. In the same way, display the G primary color signal and then use S/H - GHOST-G: in the Adjustment menu to adjust so that G color ghost is at a minimum.
4. In the same way, display the B primary color signal and then use S/H - GHOST B: in the Adjustment menu to adjust so that B color ghost is at a minimum.

4 - 5 Flicker adjustment (V.COM adjustment)

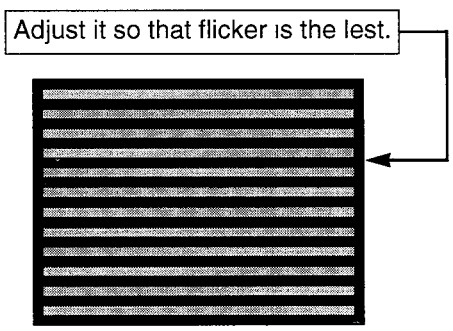
Adjustment procedure

1. Make this adjustment after completing the adjustment in 4-4 Ghost adjustment.
2. Use the SVGA VESA (60) timing signal to input a 0.35Vp-p R primary color signal for every other line.
3. Use DAC-P - V.COM - R: in the Adjustment menu to adjust until flicker is minimum.
4. Use the SVGA VESA (60) timing signal to input a 0.35Vp-p G primary color signal for every other line.
5. Use DAC-P - V.COM - G: in the Adjustment menu to adjust until flicker is minimum.
6. Use the SVGA VESA (60) timing signal to input a 0.35Vp-p B primary color signal for every other line.
7. Use DAC-P - V.COM - B: in the Adjustment menu to adjust until flicker is minimum.

4 - 6 NRSH adjustment (vertical streak adjustment)

Adjustment procedure

1. Make this adjustment after completing the adjustment in 4-5 Flicker adjustment.
2. Use the SVGA VESA (60) timing signal to input a 0.7Vp-p 16-step gray scale signal.
3. Use DAC-P - NRSH in the Adjustment menu to adjust until vertical streaks are minimum every 6 dots or every 12 dots.
   (This adjustment will change the flicker level so always adjust the flicker after making this adjustment.)
4. Then vertical streaks is still displayed, use S/H-S/H Timing in the Adjustment menu to adjust until vertical streaks are minimum.



4 - 7 White balance adjustment

Adjustment procedure

1. Make this adjustment after completing the adjustment in 4-6 NRSH adjustment.
2. Use the SVGA VESA (60) timing signal to input a 0.7Vp-p 16-step G primary color signal.
3. Use DAC-P - SUB BRIGHT - G: and DAC-P - SUB CONTRAST - G: in the Adjustment menu to adjust to the optimum 16-step shading characteristics (visually).

   Adjustment hints:

   Lock DAC-P - SUB CONTRAST - G: at 30. Also lock DAC-P - BLACK2-GAIN - G: at 50.

   Use SUB BRIGHT - G: to adjust until the last two of the 16 steps on the bright side can no longer be distinguished and then return slightly.

   After adjusting, if contrast is thought to be insufficient, use DAC-P - SUB CONTRAST - G: to slightly increase the contrast and then readjust.

   To lower only the black level, adjust BLACK2-GAIN - G:.
4. Switch to a 0.21Vp-p white signal.
5. Use DAC-P - SUB BRIGHT - R: and DAC-P - SUB CONTRAST - B: in the Adjustment menu to adjust until the color coordinates in the center of the screen are as follows.

   X = 0.280 ±0.005, Y = 0.340 ±0.01 (low brightness white balance).
6. Switch to a 0.52Vp-p white signal.
7. Use DAC-P - SUB BRIGHT - R: and DAC-P - SUB CONTRAST - B: in the Adjustment menu to adjust until the color coordinates in the center of the screen are as follows.

   X = 0.280 ±0.005, Y = 0.345 ±0.01 (low brightness white balance).
8. Repeat the operations described in items (4) - (7) and adjust the low brightness and medium brightness white balance.
9. Next, switch to a 0.07Vp-p white signal.
10. Use DAC-P - BLACK2 GAIN - R: and DAC-P - BLACK2 GAIN - B: in the Adjustment menu to adjust until the color coordinates in the center of the screen are as follows.

    X = 0.270 ±0.03, Y = 0.320 ±0.03 (black white balance).

Note:

Use the Minolta CL-100, Color Differential Meter for measurements and adjustments.

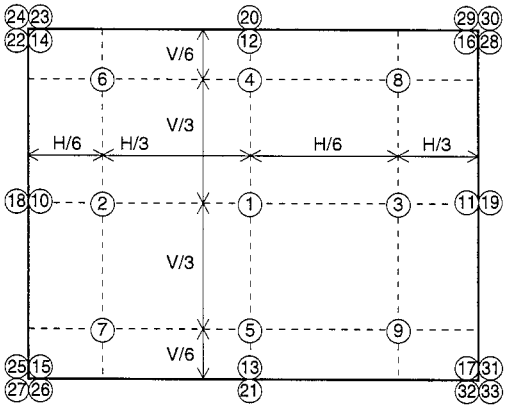
4 - 8 Color uniformity adjustment

Adjustment preparations

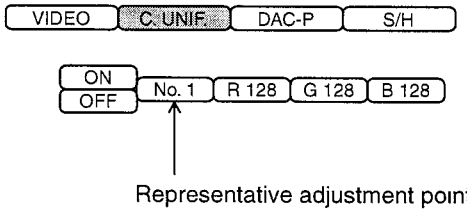
1. Make this adjustment after completing the adjustment in 4-7 "White balance adjustment".
2. Reset color uniformity correction.

   Position the cursor on C.UNIF in the Adjustment Menu and then press the RESET key.
3. This adjustment is used to assure color uniformity over the entire screen by adjusting in sequence the white balance of each of the 33 points shown in the diagram below, starting with the smallest signal.
4. Do not adjust adjustment point No. 1 because, as with DAC-P - SUB BRIGHT in the Adjustment Menu, the brightness of the entire screen will be changed.
5. Basically, only adjustment points No. 2 and No. 3 can be adjusted for the color green (G).

Representative adjustment points



Adjustment Menu



Representative adjustment points No.

Adjustment procedure

1. Use the SVGA VESA (60) timing signal to input a 0.35Vp-p G primary color signal.
2. Measure the illumination at adjustment points No. 2 and No. 3.
   The values should be:
   No. 2 = Y2 [lux]
   No. 3 = Y3 [lux]
3. Determine which of the No. 2 or No. 3 adjustment point has the higher illumination and then adjust it to match the one with the lower illumination.
   For example, if Y2 > Y3, adjust No. 2 G: to set the No. 2 illumination as follows.
   Y2 = Y3 ± 10 [lx]
   This completes the G color adjustment.
4. Next, use the SVGA VESA (60) timing signal to input a 0.35Vp-p G white signal.
5. Measure and make a note of the color coordinates of adjustment point No. 1.
   The values should be: x = x1, y = y1

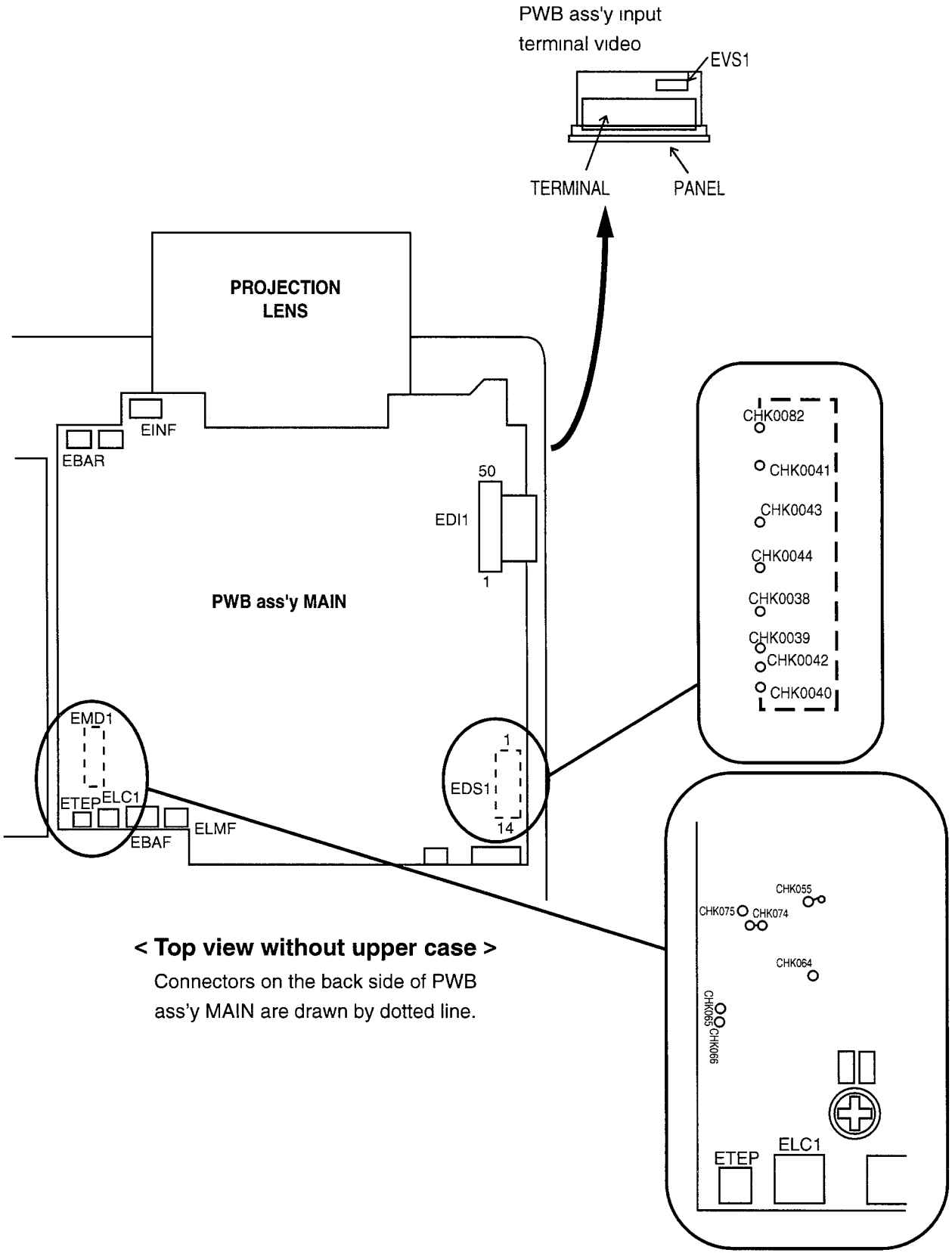
Note:

When using the CL-100 (Color Differential Meter), it is convenient to use the Delta mode. After measuring the color coordinates of adjustment point No. 1, hold down the [F] button on the front and set the slide switch on the side to [Δ] Delta. After that, the differences from adjustment point No. 1 will be displayed as the measurement values.

6. Next, measure the color coordinates of adjustment point No. 2, and then adjust No. 2 A: and B: until the color coordinates are as follows.
   x = x1 ± 0.01 , y = y1 ± 0.01 (ANSI point color uniformity)
7. Measure and adjust the color coordinates of adjustment points No. 3 - No. 9 in sequence in the same way, starting with the smallest signal.
8. Next, measure the color coordinates of adjustment point No. 10, and then adjust No. 10 A: and B: until the color coordinates are as follows.
   x = x1 ± 0.01 , y = y1 ± 0.02 (corner color uniformity)
9. Measure and adjust the color coordinates of adjustment points No. 11 - No. 17 in sequence in the same way, starting with the smallest signal.
10. This completes the normal color uniformity adjustment. Adjust visually if local lack of color uniformity still remains around the periphery of the screen.
11. If there is local lack of color uniformity around the periphery of the screen, adjust the color coordinates of adjustment point No. 18 - No. 21 outside the worst side of the screen.
12. If there is local lack of color uniformity in the corners of the screen, adjust the color coordinates of adjustment point No. 22 - No. 33 outside the worst corner of the screen.

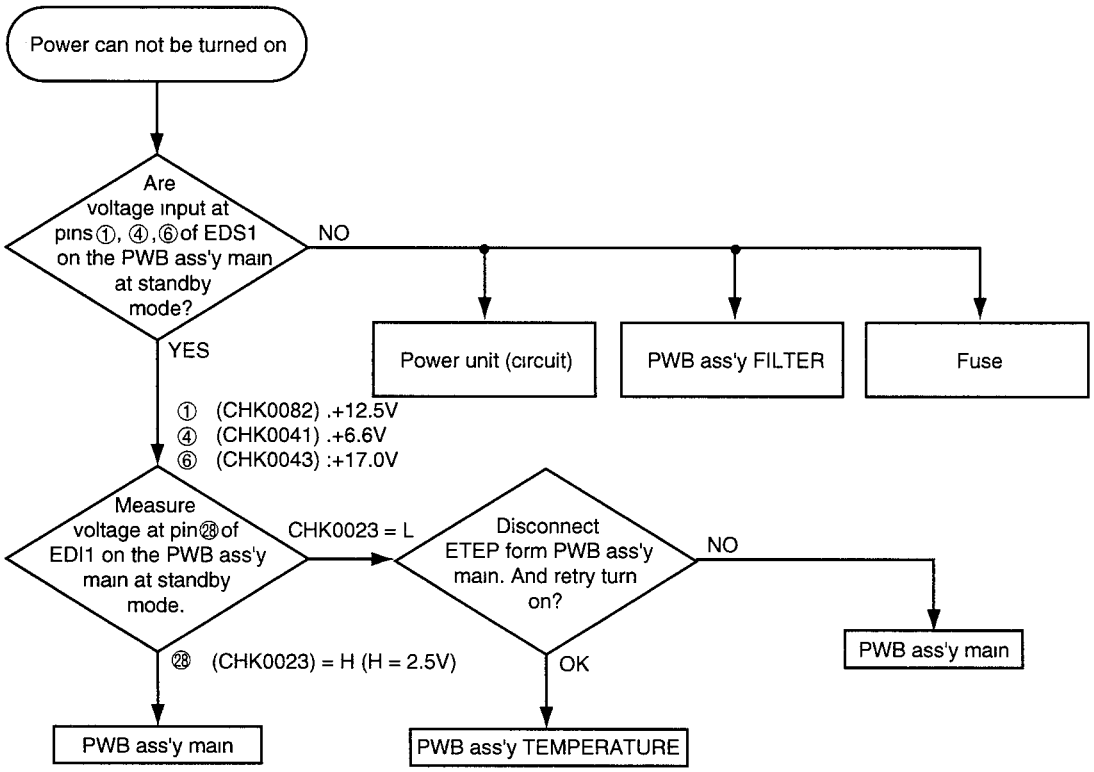
5. Troubleshooting

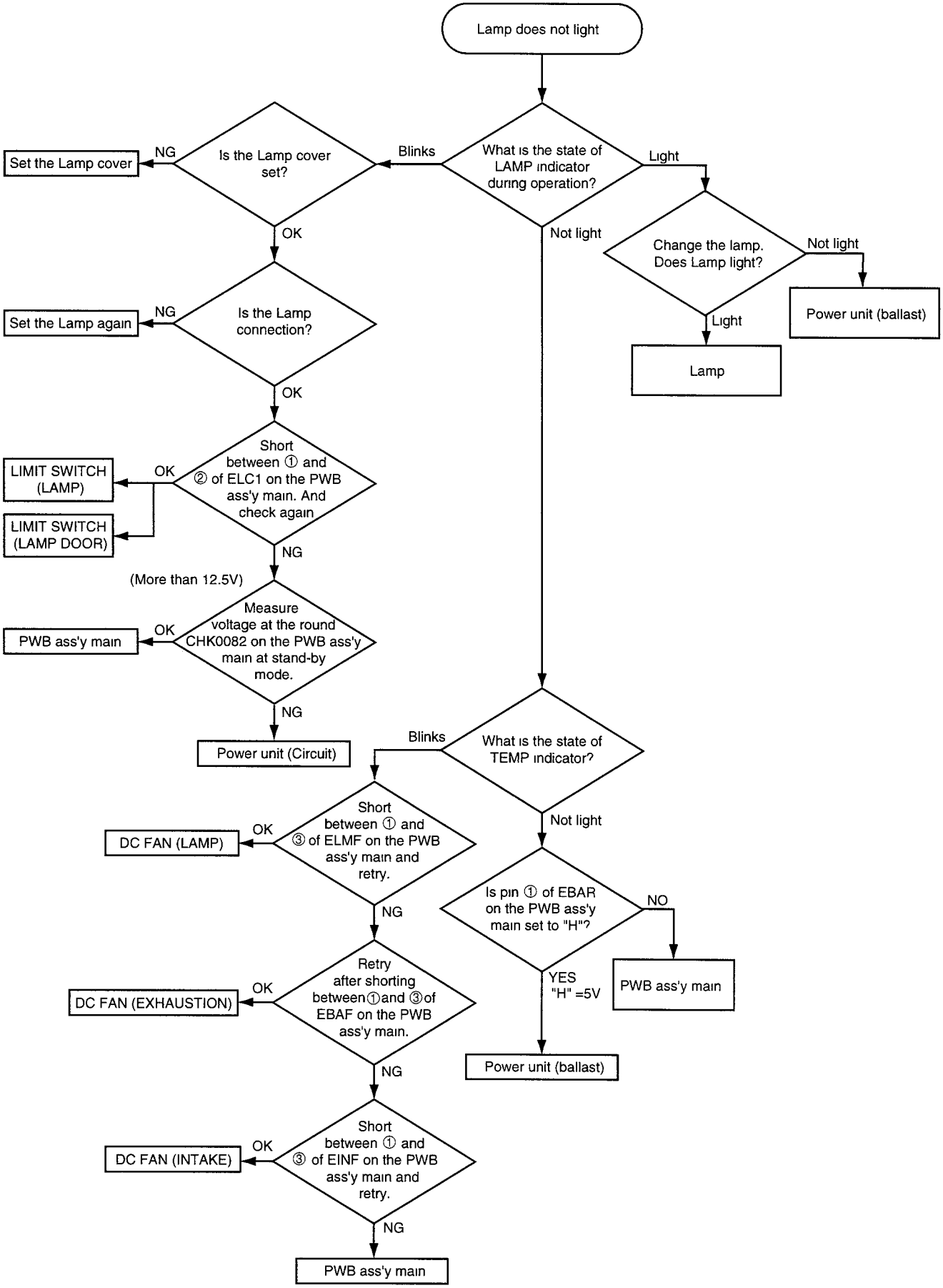
Check points at trouble shooting

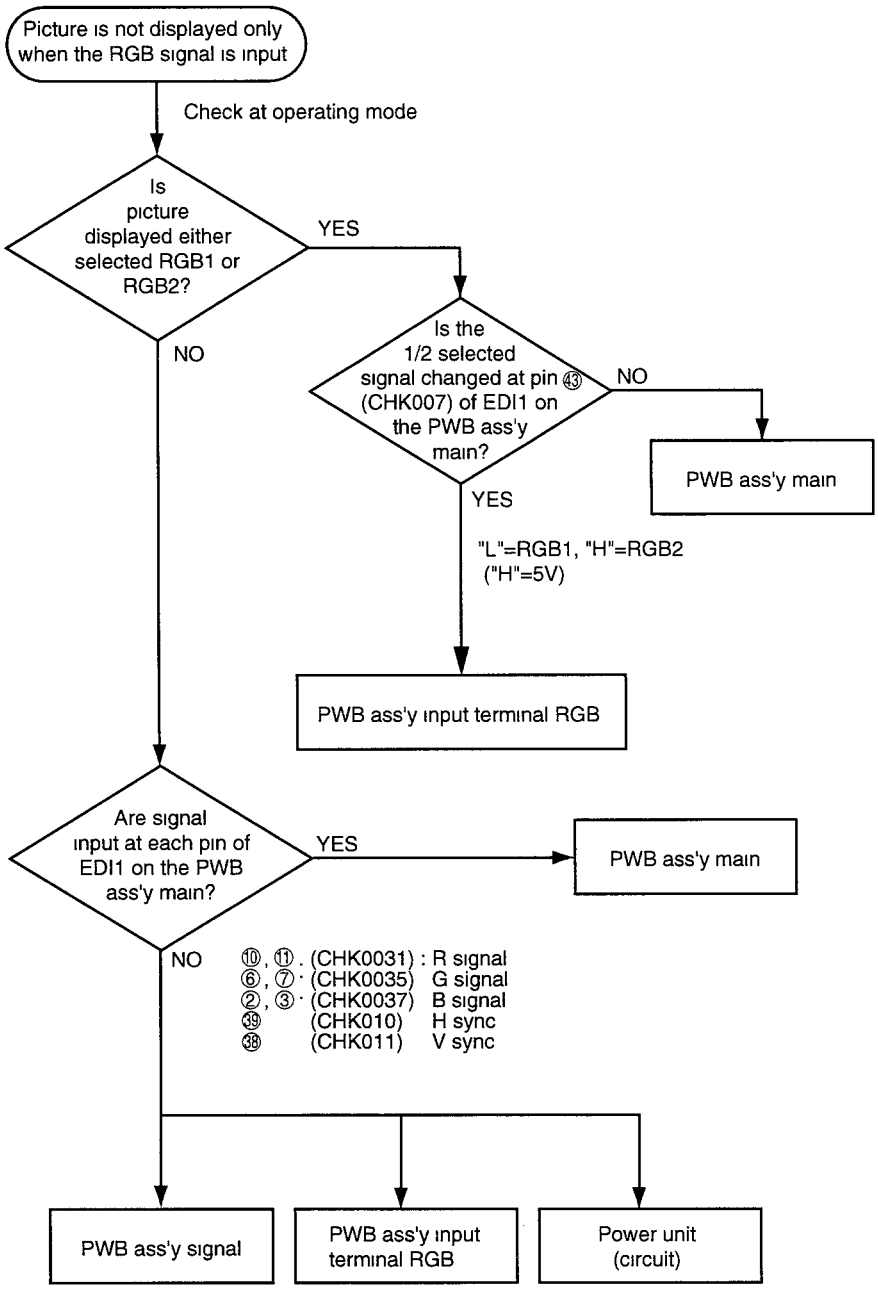


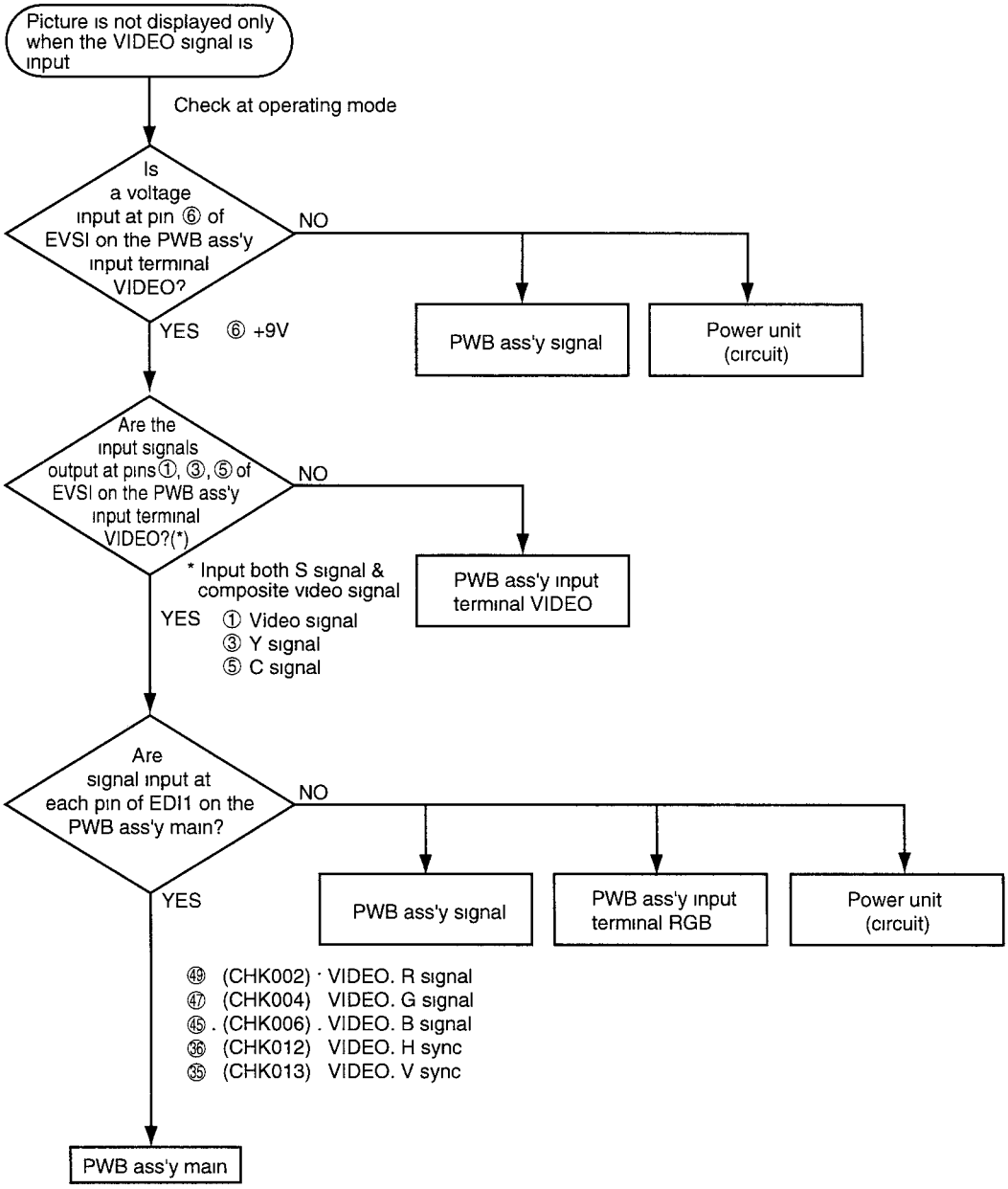
< Top view without upper case >

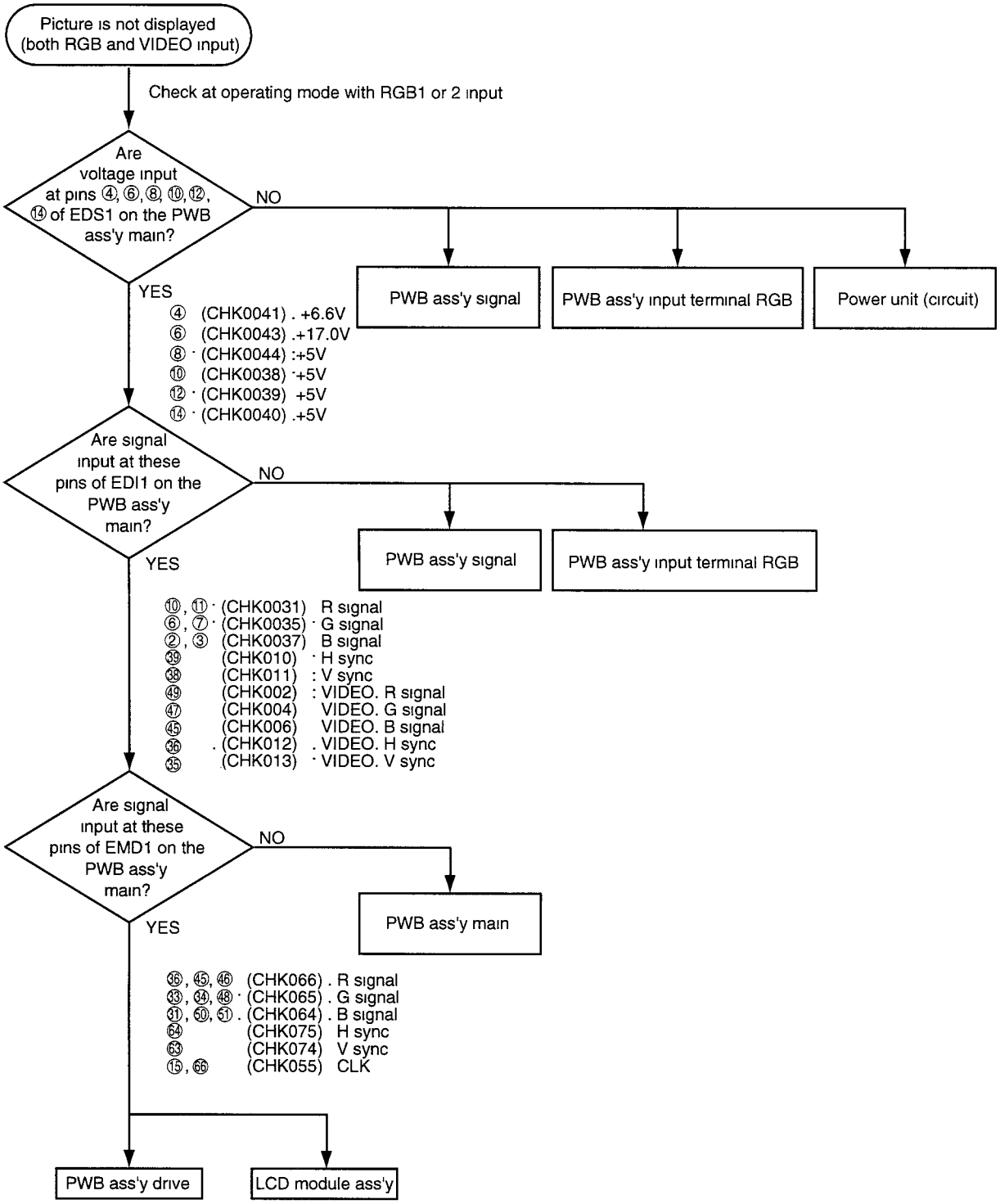
Connectors on the back side of PWB ass'y MAIN are drawn by dotted line.

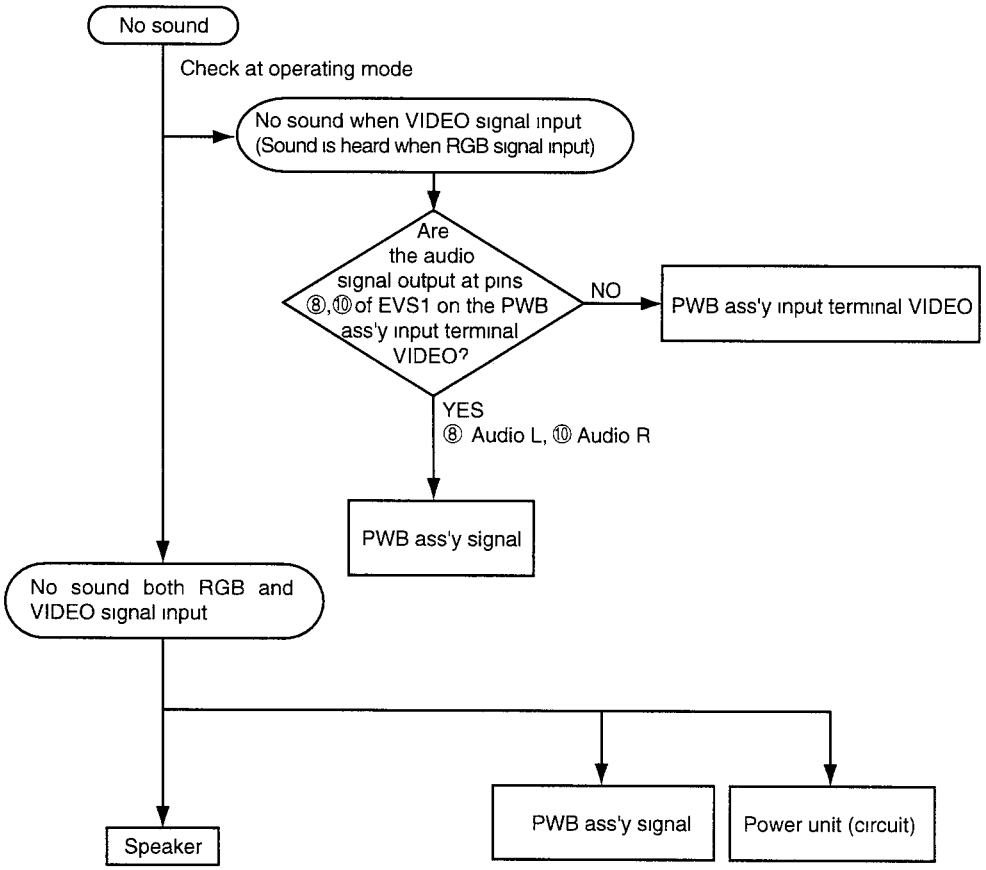

Power can not be turned on
Are voltage input at pins ①, ④, ⑥ of EDS1 on the PWB ass'y main at standby mode?
NO
YES
Power unit (circuit)
PWB ass'y FILTER
Fuse
① (CHK0082) .+12.5V
④ (CHK0041) .+6.6V
⑥ (CHK0043) :+17.0V
Measure voltage at pin ㉘ of EDI1 on the PWB ass'y main at standby mode.
CHK0023 = L
Disconnect ETEP form PWB ass'y main. And retry turn on?
NO
PWB ass'y main
㉘ (CHK0023) = H (H = 2.5V)
OK
PWB ass'y main
PWB ass'y TEMPERATURE

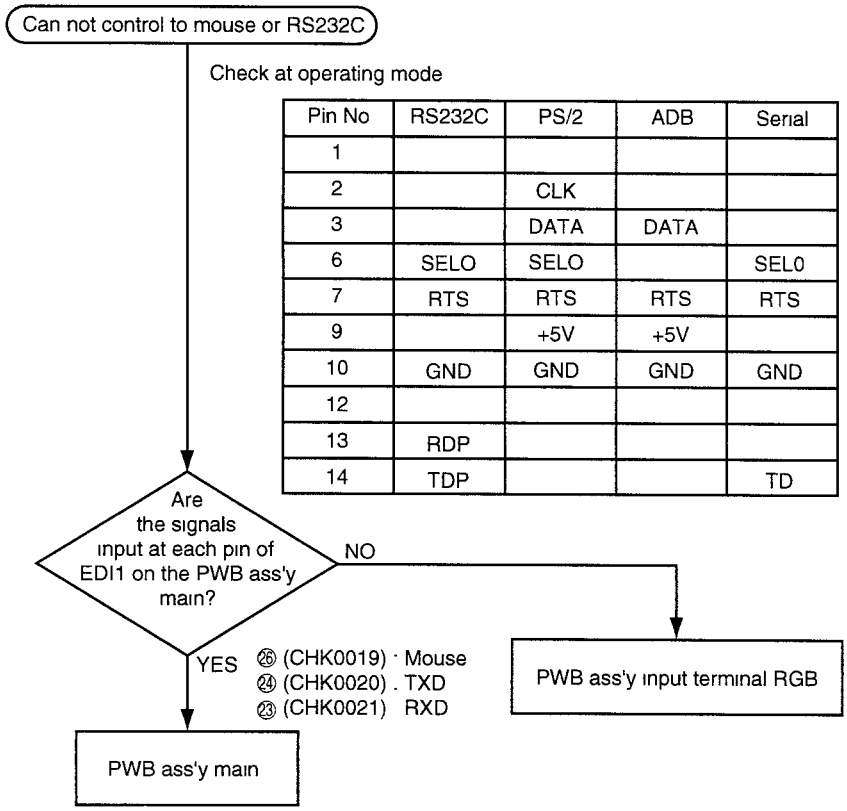

Lamp does not light
What is the state of LAMP indicator during operation?
Blinks
Light
Not light
Is the Lamp cover set?
NG
Set the Lamp cover
OK
Is the Lamp connection?
NG
Set the Lamp again
OK
Change the lamp. Does Lamp light?
Not light
Power unit (ballast)
Light
Lamp
Short between ① and ② of ELC1 on the PWB ass'y main. And check again
OK
LIMIT SWITCH (LAMP)
LIMIT SWITCH (LAMP DOOR)
NG
(More than 12.5V)
Measure voltage at the round CHK0082 on the PWB ass'y main at stand-by mode.
OK
PWB ass'y main
NG
Power unit (Circuit)
What is the state of TEMP indicator?
Blinks
Not light
Short between ① and ③ of ELMF on the PWB ass'y main and retry.
OK
DC FAN (LAMP)
NG
Retry after shorting between① and ③of EBAF on the PWB ass'y main.
OK
DC FAN (EXHAUSTION)
NG
Short between ① and ③ of EINF on the PWB ass'y main and retry.
OK
DC FAN (INTAKE)
NG
PWB ass'y main
Is pin ① of EBAR on the PWB ass'y main set to "H"?
NO
PWB ass'y main
YES
"H" =5V
Power unit (ballast)


Picture is not displayed only when the RGB signal is input
Check at operating mode
Is picture displayed either selected RGB1 or RGB2?
YES
NO
Is the 1/2 selected signal changed at pin ㊸ (CHK007) of EDI1 on the PWB ass'y main?
NO
PWB ass'y main
YES
"L"=RGB1, "H"=RGB2 ("H"=5V)
PWB ass'y input terminal RGB
Are signal input at each pin of EDI1 on the PWB ass'y main?
YES
PWB ass'y main
NO
⑩, ⑪ . (CHK0031) : R signal
⑥, ⑦ · (CHK0035) G signal
②, ③ · (CHK0037) B signal
㊴ (CHK010) H sync
㊳ (CHK011) V sync
PWB ass'y signal
PWB ass'y input terminal RGB
Power unit (circuit)

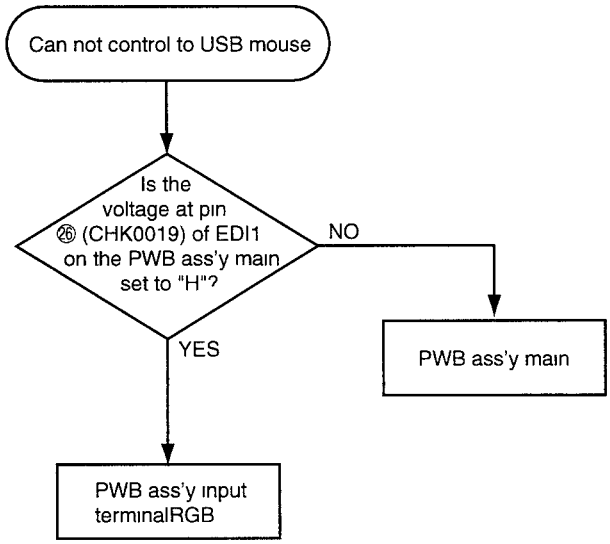

Picture is not displayed only when the VIDEO signal is input
Check at operating mode
Is a voltage input at pin ⑥ of EVSI on the PWB ass'y input terminal VIDEO?
NO
YES ⑥ +9V
PWB ass'y signal
Power unit (circuit)
Are the input signals output at pins ①, ③, ⑤ of EVSI on the PWB ass'y input terminal VIDEO?(*)
NO
* Input both S signal & composite video signal
PWB ass'y input terminal VIDEO
YES ① Video signal
③ Y signal
⑤ C signal
Are signal input at each pin of EDI1 on the PWB ass'y main?
NO
YES
PWB ass'y signal
PWB ass'y input terminal RGB
Power unit (circuit)
㊾ (CHK002) · VIDEO. R signal
㊼ (CHK004) VIDEO. G signal
㊺ . (CHK006) . VIDEO. B signal
㊱ (CHK012) VIDEO. H sync
㊱ (CHK013) VIDEO. V sync
PWB ass'y main


Picture is not displayed (both RGB and VIDEO input)
Check at operating mode with RGB1 or 2 input
Are voltage input at pins ④, ⑥, ⑧, ⑩, ⑫, ⑭ of EDS1 on the PWB ass'y main?
NO
PWB ass'y signal
PWB ass'y input terminal RGB
Power unit (circuit)
YES
④ (CHK0041) . +6.6V
⑥ (CHK0043) .+17.0V
⑧ · (CHK0044) :+5V
⑩ (CHK0038) ·+5V
⑫ · (CHK0039) +5V
⑭ · (CHK0040) .+5V
Are signal input at these pins of EDI1 on the PWB ass'y main?
NO
PWB ass'y signal
PWB ass'y input terminal RGB
YES
⑩, ⑪ · (CHK0031) R signal
⑥, ⑦ · (CHK0035) · G signal
②, ③ (CHK0037) B signal
㊴ (CHK010) · H sync
㊳ (CHK011) : V sync
㊾ (CHK002) : VIDEO. R signal
㊼ (CHK004) VIDEO. G signal
㊺ (CHK006) VIDEO. B signal
㊱ . (CHK012) . VIDEO. H sync
㉟ (CHK013) · VIDEO. V sync
Are signal input at these pins of EMD1 on the PWB ass'y main?
NO
PWB ass'y main
YES
㊱, ㊺, ㊻ (CHK066) . R signal
㉝, ㉞, ㊽ · (CHK065) . G signal
㉛, ㊿, ㊶ . (CHK064) . B signal
㊹ (CHK075) H sync
㊸ (CHK074) V sync
⑮, ㊻ (CHK055) CLK
PWB ass'y drive
LCD module ass'y


No sound
Check at operating mode
No sound when VIDEO signal input
(Sound is heard when RGB signal input)
Are the audio signal output at pins ⑧,⑩ of EVS1 on the PWB ass'y input terminal VIDEO?
NO
PWB ass'y input terminal VIDEO
YES
⑧ Audio L, ⑩ Audio R
PWB ass'y signal
No sound both RGB and VIDEO signal input
Speaker
PWB ass'y signal
Power unit (circuit)


Can not control to mouse or RS232C
Check at operating mode
Are the signals input at each pin of EDI1 on the PWB ass'y main?
NO
YES
㉖ (CHK0019) · Mouse
㉔ (CHK0020) . TXD
㉓ (CHK0021) RXD
PWB ass'y input terminal RGB
PWB ass'y main

Pin No	RS232C	PS/2	ADB	Serial
1				
2		CLK		
3		DATA	DATA	
6	SELO	SELO		SELO
7	RTS	RTS	RTS	RTS
9		+5V	+5V	
10	GND	GND	GND	GND
12				
13	RDP			
14	TDP			TD

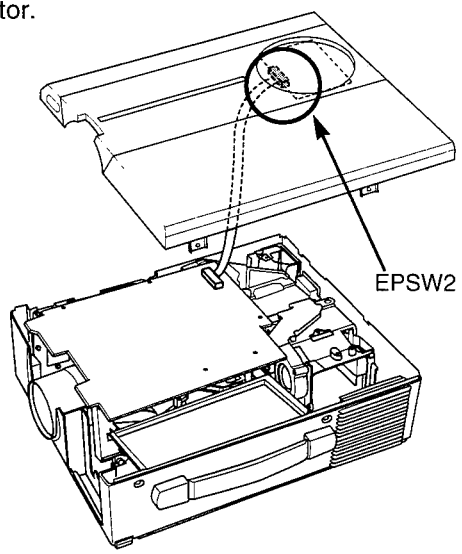

Can not control to USB mouse
Is the voltage at pin ㉖ (CHK0019) of EDI1 on the PWB ass'y main set to "H"?
NO
YES
PWB ass'y main
PWB ass'y input terminalRGB

6. Service points

6 - 1 POINT

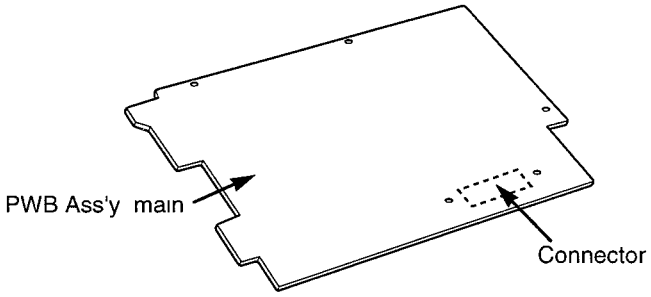
• Cautions when removing the Upper case

In the Upper case, an operation PWB is installed. When removing, lift carefully without using excessive force to prevent damaging the ESW2 connector.



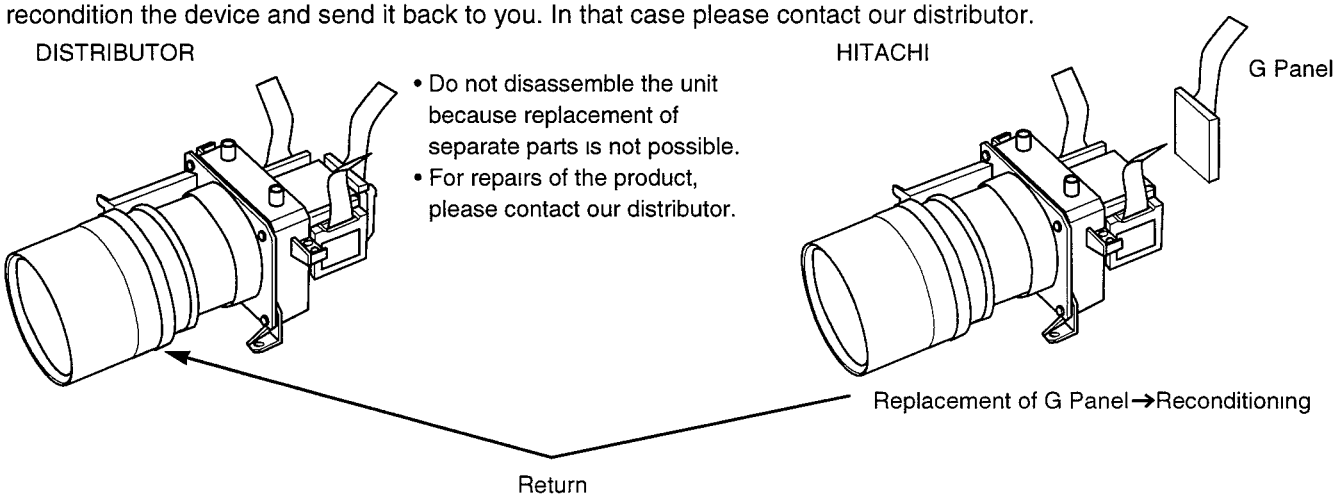
• Cautions when removing the main PWB

When removing the main PWB, there is danger of damaging the connector connecting the drive PWB. Lift up the part near the main PWB connector and disconnect the connector before removing the main PWB.

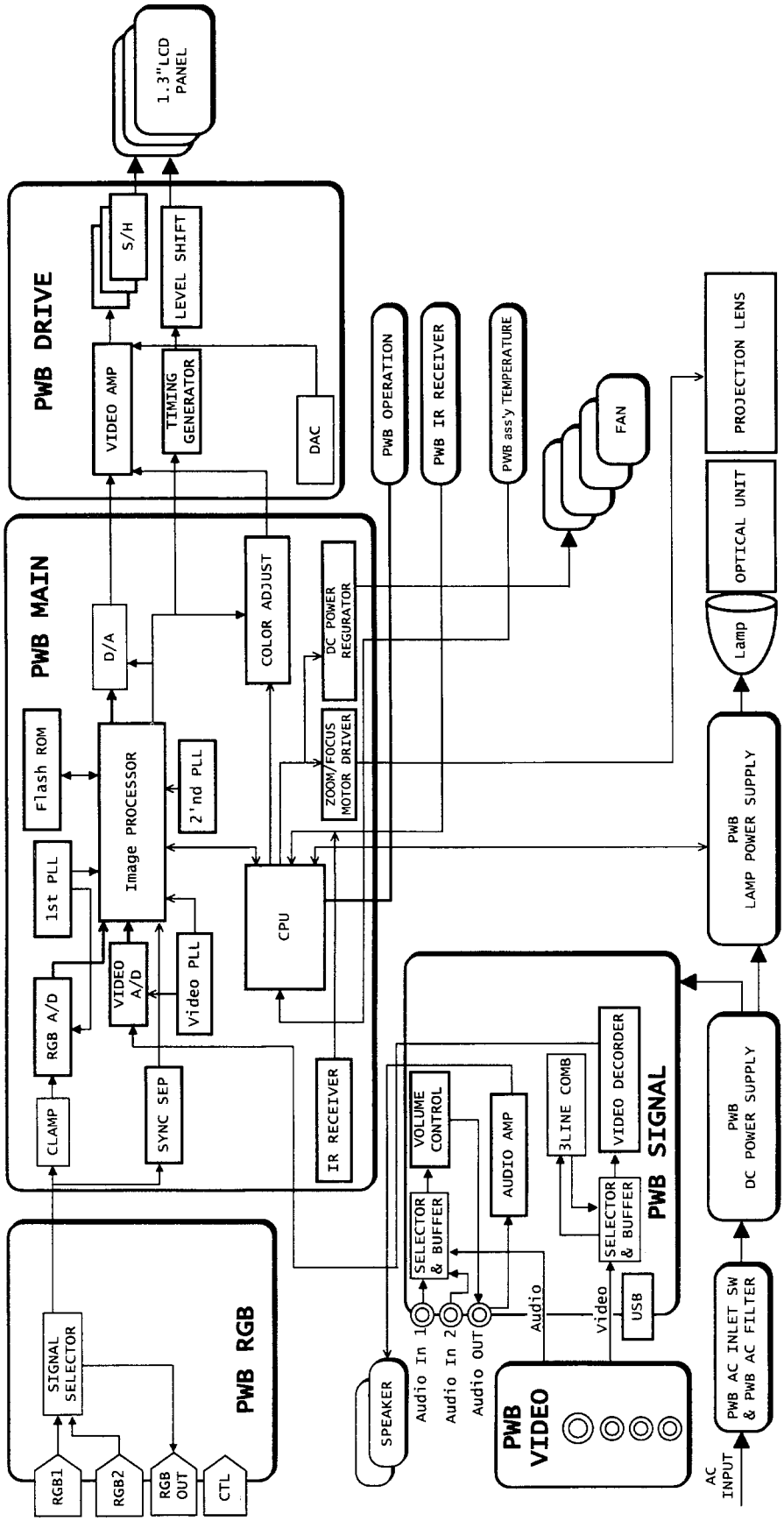


• Before Replacing the LCD / Lens Prism

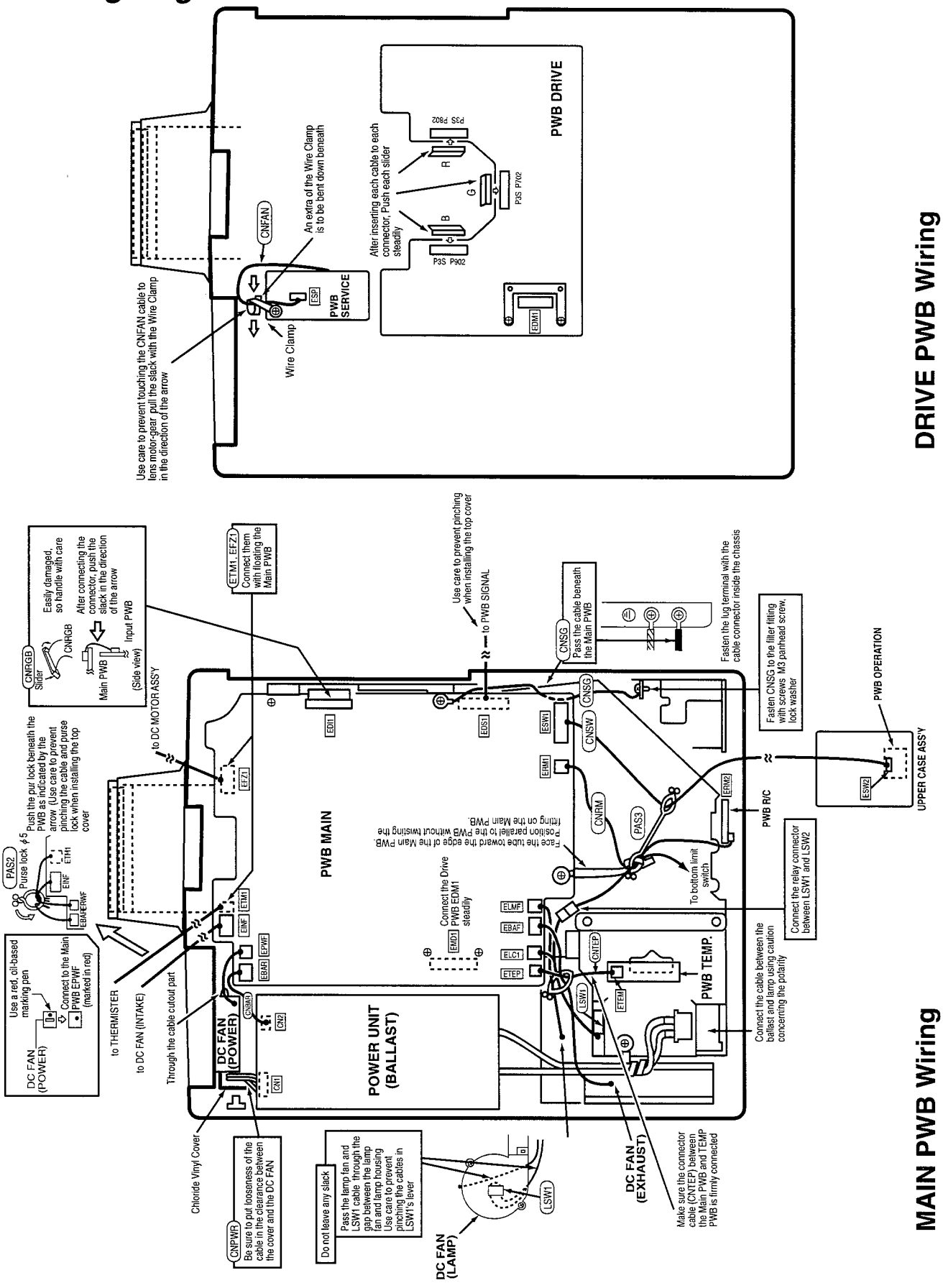
You should not replace separately the parts of the liquid crystal LCD / Lens Prism because it works properly only when used together. Therefore, regarding these parts, you can either replace part , LCD / Lens Prism Ass'y, or send the whole unit LCD / Lens Prism Ass'y back to Hitachi, where we will replace the malfunctioning part, recondition the device and send it back to you. In that case please contact our distributor.

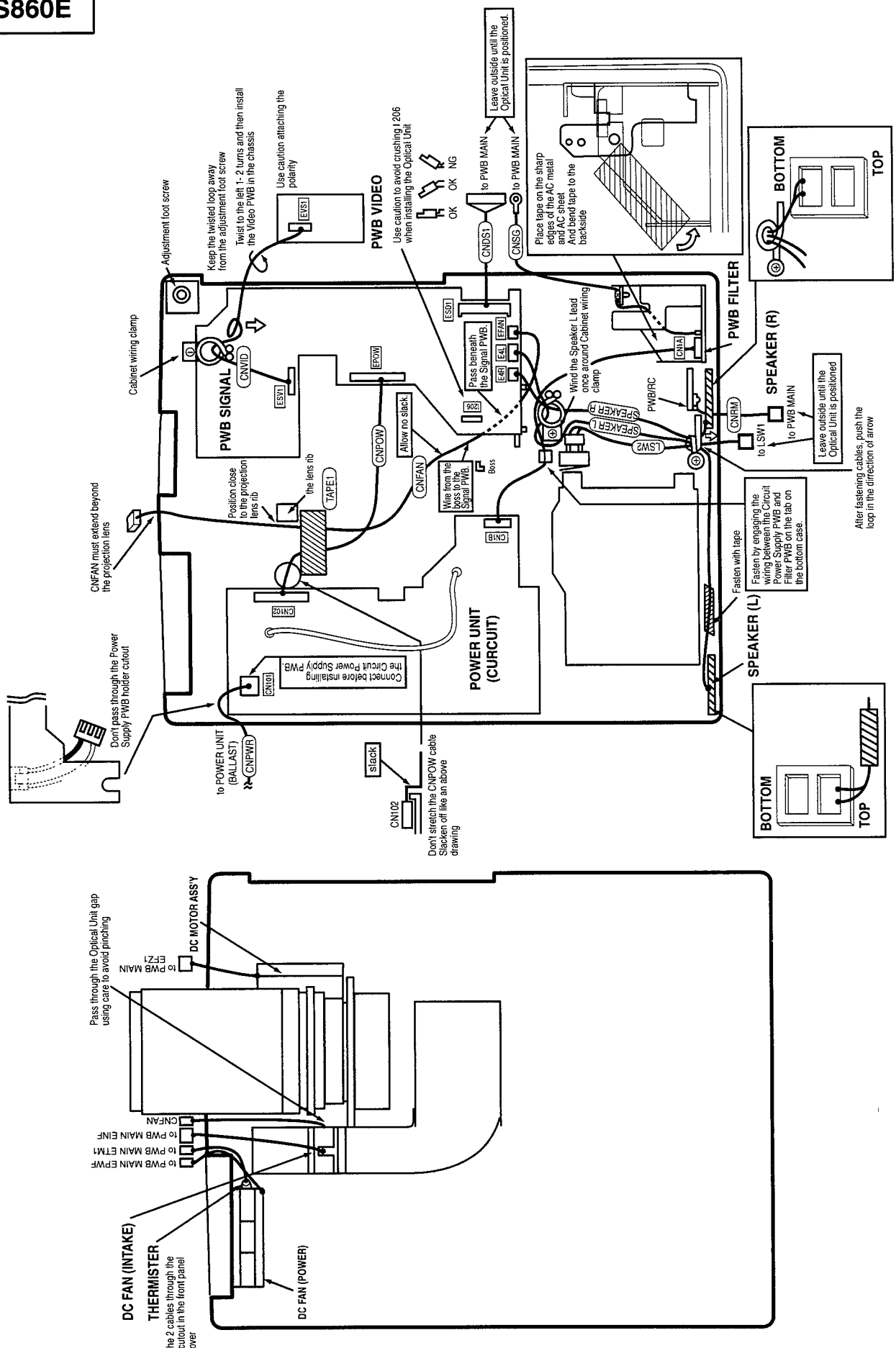

DISTRIBUTOR
• Do not disassemble the unit because replacement of separate parts is not possible.
• For repairs of the product, please contact our distributor.
HITACHI
G Panel
Replacement of G Panel→Reconditioning
Return

7. Block diagram



8. Wiring diagram

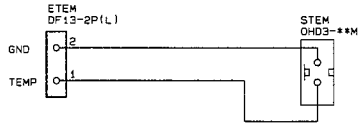

PWB DRIVE
P3S P902
P3S P702
P3S P802
R
G
B
After inserting each cable to each connector. Push each slider steadily
An extra of the Wire Clamp is to be bent down beneath
CNFAN
ESP
PWB SERVICE
EDM1
Wire Clamp
Use care to prevent touching the CNFAN cable to lens motor-gear pull the slack with the Wire Clamp in the direction of the arrow
DRIVE PWB Wiring
PWB MAIN
POWER UNIT (BALLAST)
PWB TEMP.
PWB R/C
PWB OPERATION
UPPER CASE ASS'Y
DC FAN (POWER)
DC FAN (EXHAUST)
DC FAN (LAMP)
to DC MOTOR ASS'Y
to THERMISTER
to DC FAN (INTAKE)
to PWB SIGNAL
Use a red, oil-based marking pen
Connect to the Main PWB EPWF (marked in red)
Push the pur lock beneath the PWB as indicated by the arrow (Use care to prevent pinching the cable and purse lock when installing the top cover
Purse lock
Easily damaged, so handle with care
After connecting the connector, push the slack in the direction of the arrow
Input PWB
(Side view)
Main PWB
CNRGB
Slider
Connect them with floating the Main PWB
Use care to prevent pinching when installing the top cover
Pass the cable beneath the Main PWB
Fasten the lug terminal with the cable connector inside the chassis
Fasten CNSG to the filler fitting with screws M3 panhead screw, lock washer
Face the tube toward the edge of the Main PWB. Position parallel to the PWB without twisting the fitting on the Main PWB.
Connect the Drive PWB EDM1 steadily
To bottom limit switch
Connect the relay connector between LSW1 and LSW2
Connect the cable between the ballast and lamp using caution concerning the polarity
Through the cable cutout part
Chloride Vinyl Cover
Be sure to put loosenss of the cable in the clearance between the cover and the DC FAN
Do not leave any slack
Pass the lamp fan and LSW1 cable through the gap between the lamp fan and lamp housing Use care to prevent pinching the cables in LSW1's lever
Make sure the connector cable (CNTEP) between the Main PWB and TEMP PWB is firmly connected
MAIN PWB Wiring


PWB SIGNAL
PWB VIDEO
PWB FILTER
POWER UNIT
(CURCUIT)
SPEAKER (R)
SPEAKER (L)
BOTTOM
TOP
Adjustment foot screw
Keep the twisted loop away from the adjustment foot screw
Twist to the left 1- 2 turns and then install the Video PWB in the chassis
Use caution attaching the polarity
Use caution to avoid crushing I 206 when installing the Optical Unit
OK OK NG
Leave outside until the Optical Unit is positioned.
to PWB MAIN
Place tape on the sharp edges of the AC metal and AC sheet And bend tape to the backside
Cabinet wiring clamp
Pass beneath the Signal PWB.
Wind the Speaker L lead once around Cabinet wiring clamp
PWB/RC
Leave outside until the Optical Unit is positioned
After fastening cables, push the loop in the direction of arrow
CNFAN must extend beyond the projection lens
Position close to the projection lens rib
the lens rib
Allow no slack.
Wire from the boss to the Signal PWB.
Boss
Fasten with tape
Fasten by engaging the wiring between the Circuit Power Supply PWB and Filter PWB on the tab on the bottom case.
Don't pass through the Power Supply PWB holder cutout
Connect before installing the Circuit Power Supply PWB.
to POWER UNIT (BALLAST)
slack
Don't stretch the CNPOW cable Slacken off like an above drawing
DC MOTOR ASS'Y
Pass through the Optical Unit gap using care to avoid pinching
DC FAN (INTAKE)
THERMISTER
Pass the 2 cables through the cable cutout in the front panel duct cover
DC FAN (POWER)

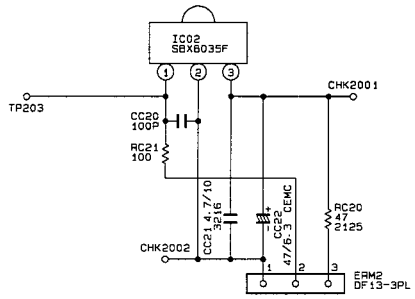
Optical Unit Wiring

Set Bottom Wiring

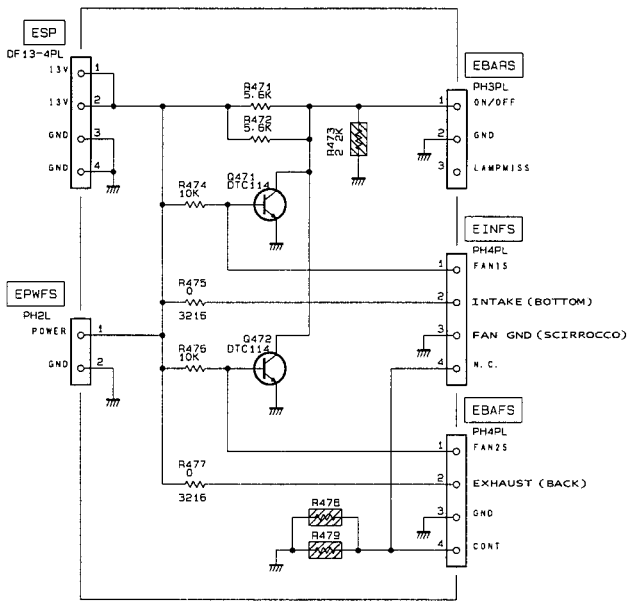
9. Basic circuit diagram



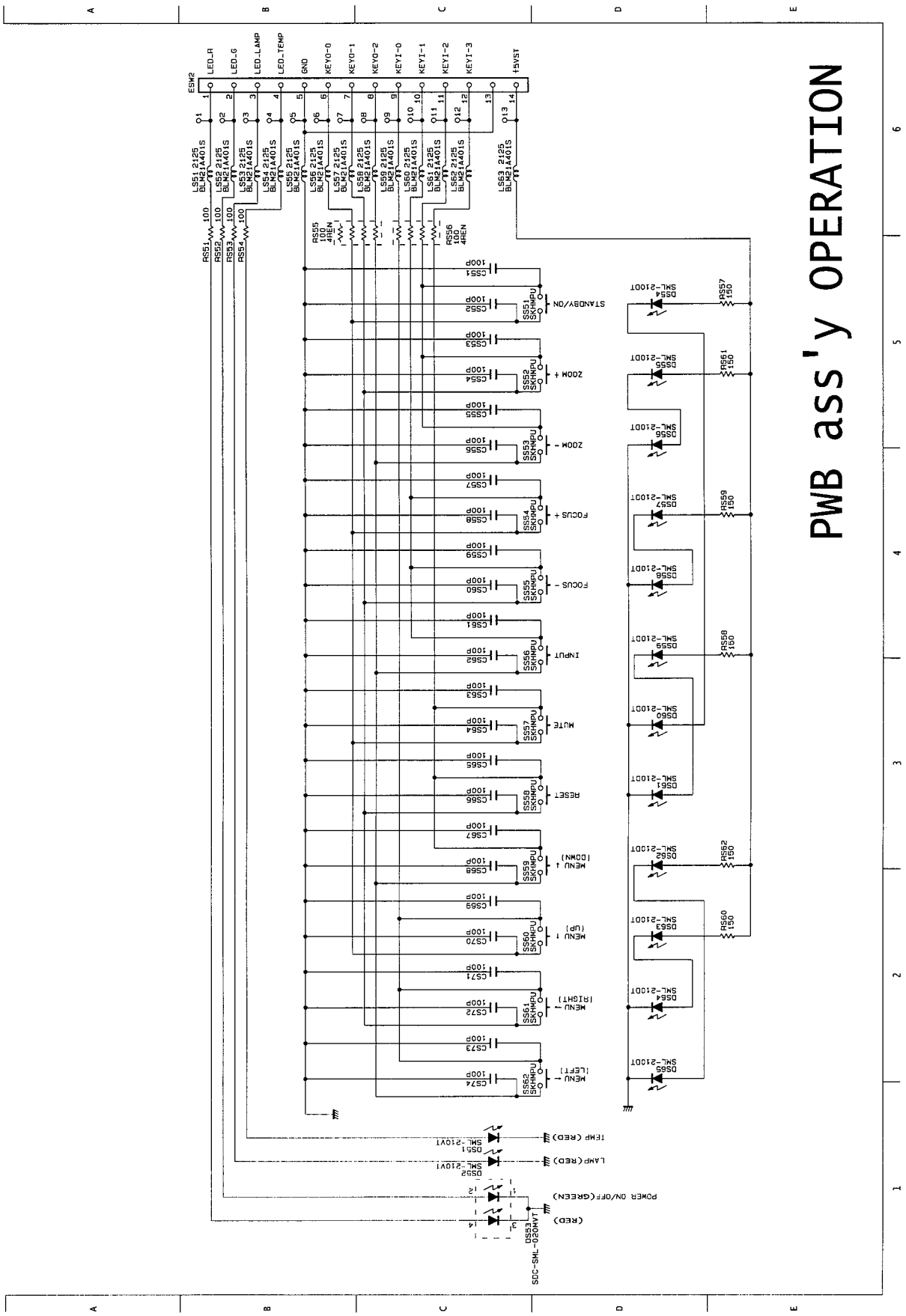
PWB ass'y TEMPERATURE

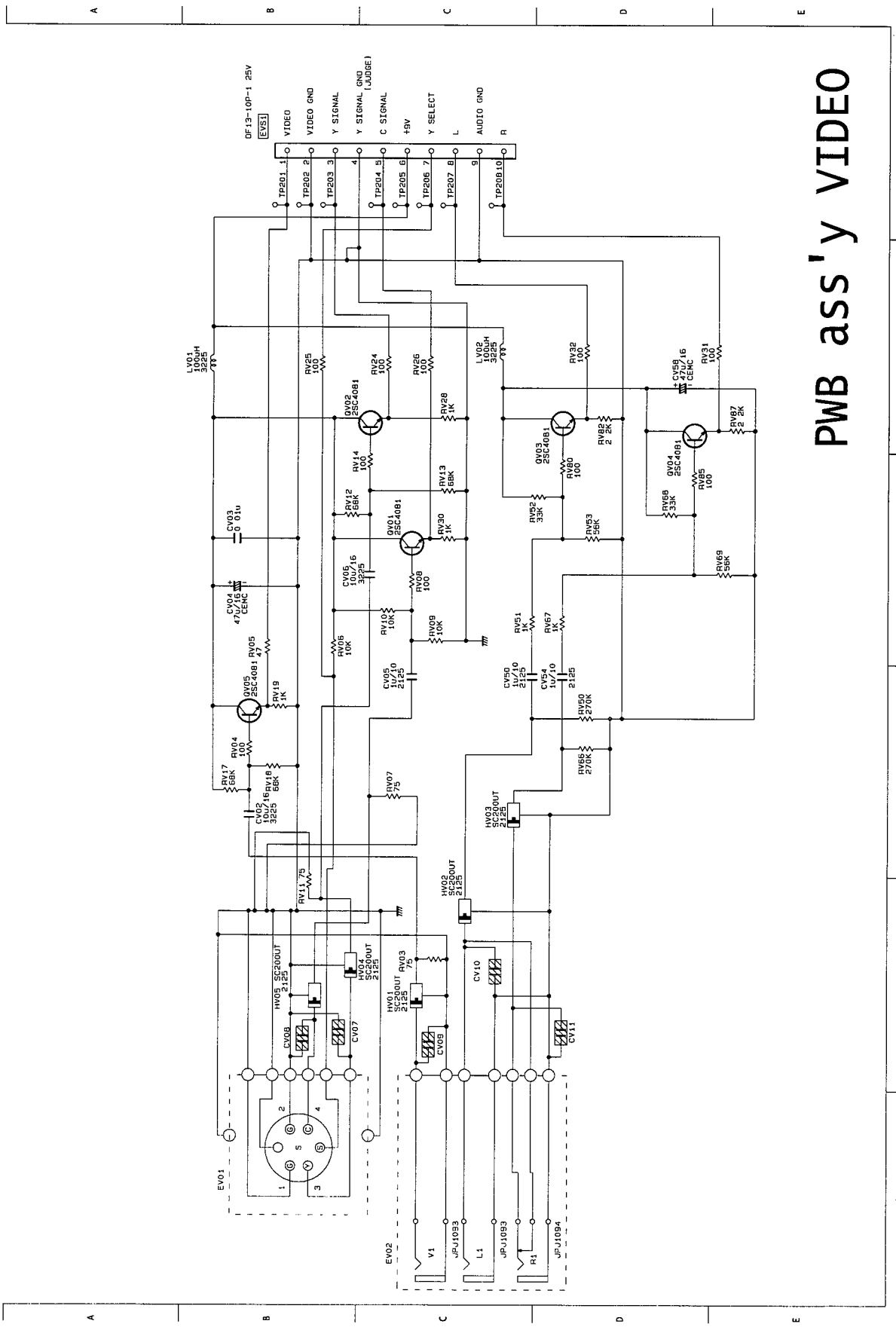


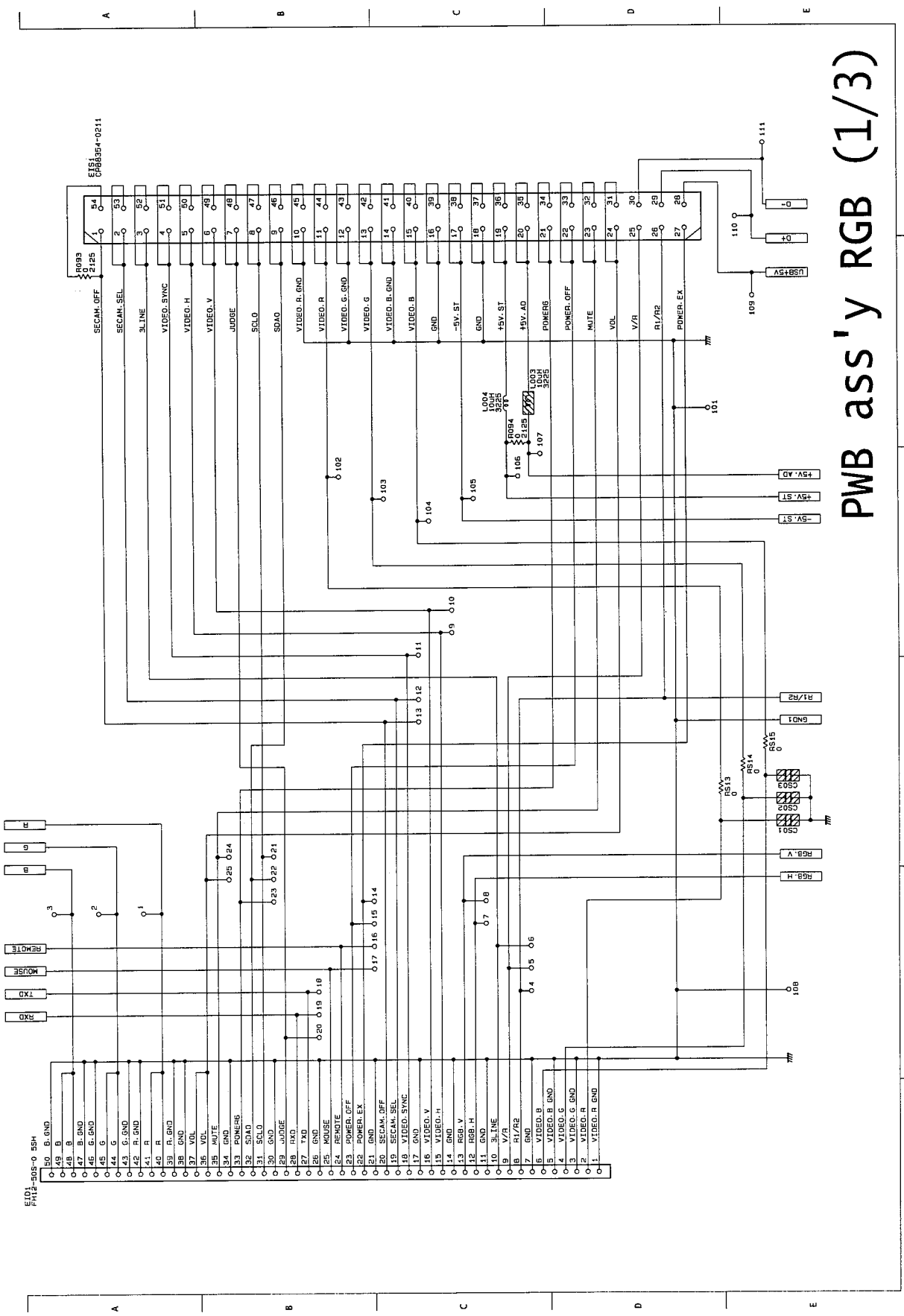
PWB ass'y R/C.

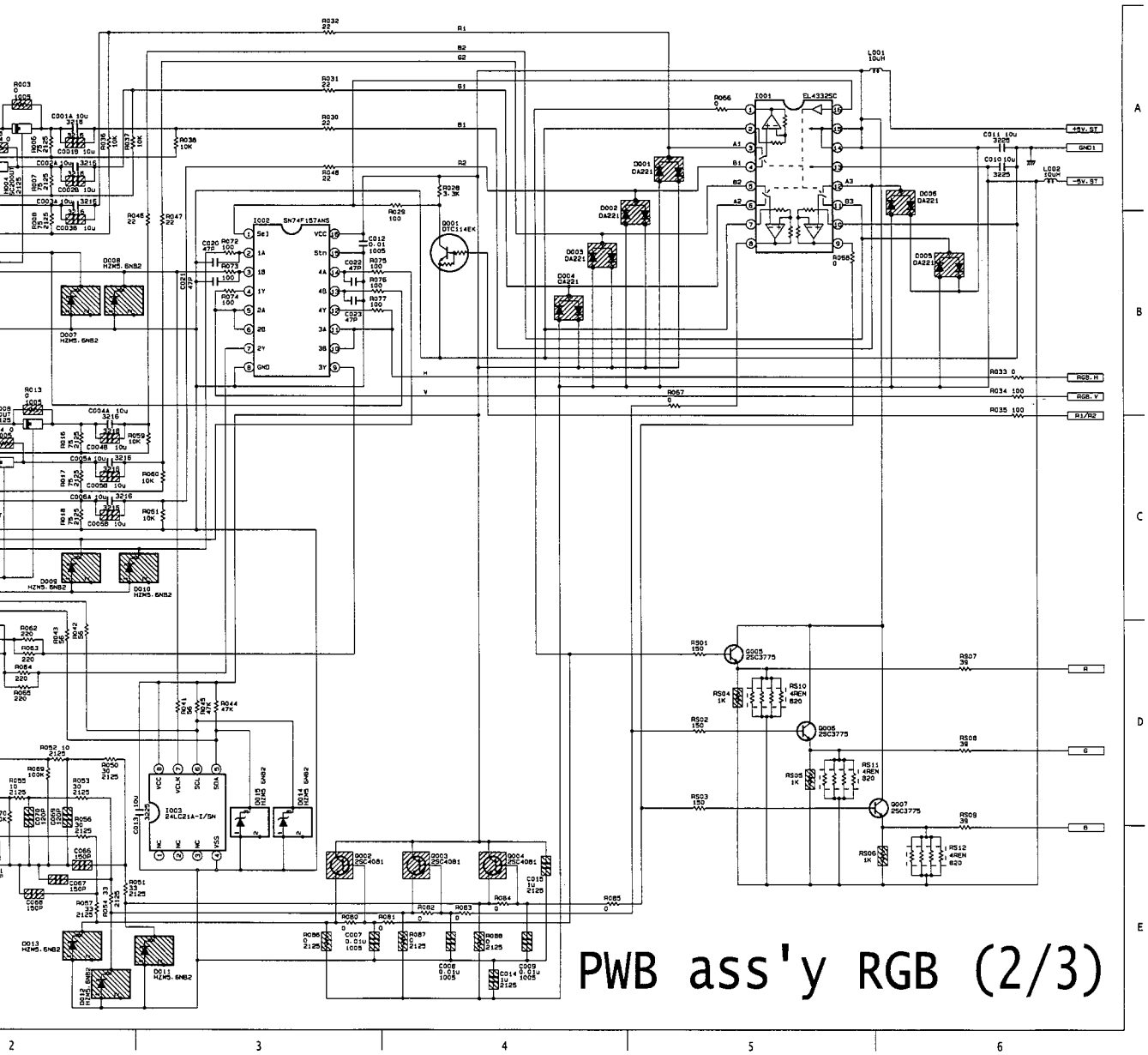


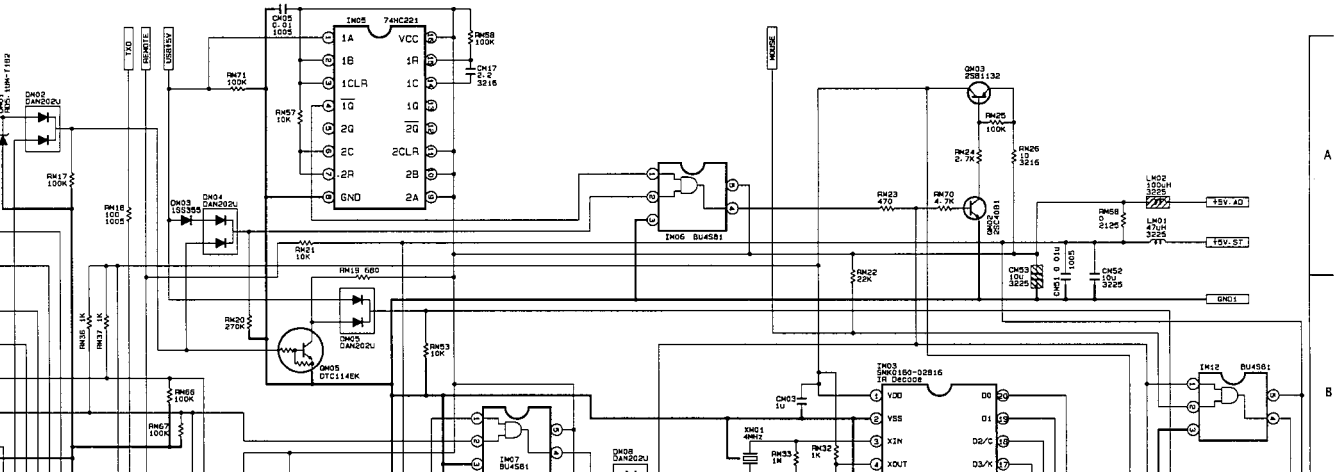
PWB ass'y SERVICE

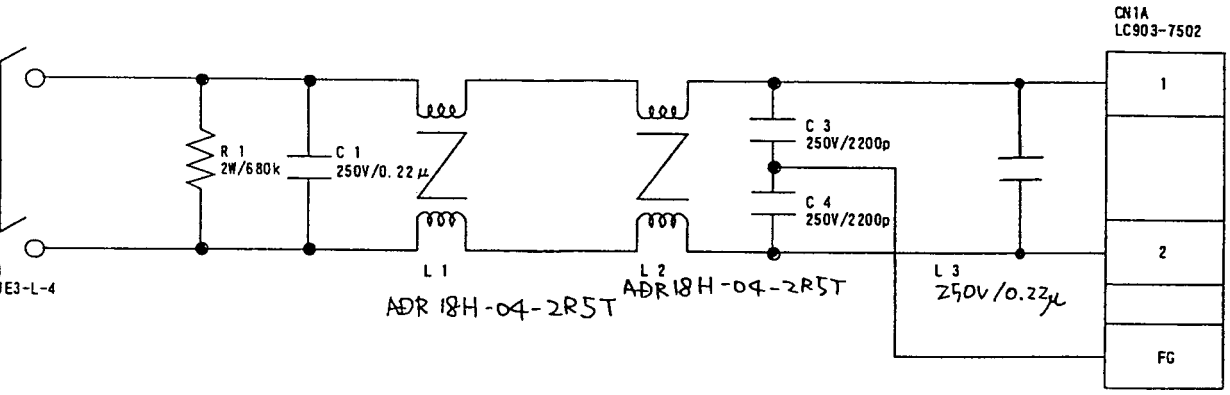

PWB ass'y OPERATION
ESW2
LED_R
LED_G
LED_LAMP
LED_TEMP
GND
KEY0-0
KEY0-1
KEY0-2
KEY1-0
KEY1-1
KEY1-2
KEY1-3
+5VST
STANDBY/ON
ZOOM +
ZOOM -
FOCUS +
FOCUS -
INPUT
MUTE
RESET
MENU ↓ (DOWN)
MENU ↑ (UP)
MENU → (RIGHT)
MENU ← (LEFT)
TEMP (RED)
LAMP (RED)
POWER ON/OFF (GREEN)
(RED)


PWB ass'y VIDEO
DF13-10P-1 25V
EVS1
VIDEO
VIDEO GND
Y SIGNAL
Y SIGNAL GND (JUDGE)
C SIGNAL
+9V
Y SELECT
L
AUDIO GND
R
TP201
TP202
TP203
TP204
TP205
TP206
TP207
TP208
LV01 100UH 3225
LV02 100UH 3225
QV01 2SC4081
QV02 2SC4081
QV03 2SC4081
QV04 2SC4081
QV05 2SC4081
CV01 0.01u
CV02 100/16 3225
CV03 0.01u
CV04 47u/16 CEMC
CV05 47u/16 3225
CV07
CV08
CV09
CV10
CV11
CV50 1u/10 2125
CV54 1u/10 2125
CV58 47u/16 CEMC
HV01 SC200UT 2125
HV02 SC200UT 2125
HV03 SC200UT 2125
HV04 SC200UT 2125
HV05 SC200UT 2125
RV01 75
RV02 100
RV03 75
RV04 100
RV05 47
RV06 10K
RV07 75
RV08 100
RV09 10K
RV10 10K
RV11 75
RV12 68K
RV13 68K
RV14 100
RV17 68K
RV18 68K
RV19 1K
RV24 100
RV25 100
RV26 100
RV28 1K
RV30 1K
RV31 100
RV32 100
RV50 270K
RV51 1K
RV52 33K
RV53 56K
RV55 100
RV56 270K
RV57 2.2K
RV58 33K
RV67 1K
RV69 56K
RV80 100
RV82 2.2K
EV01
EV02
V1
L1
R1
JPJ1093
JPJ1094

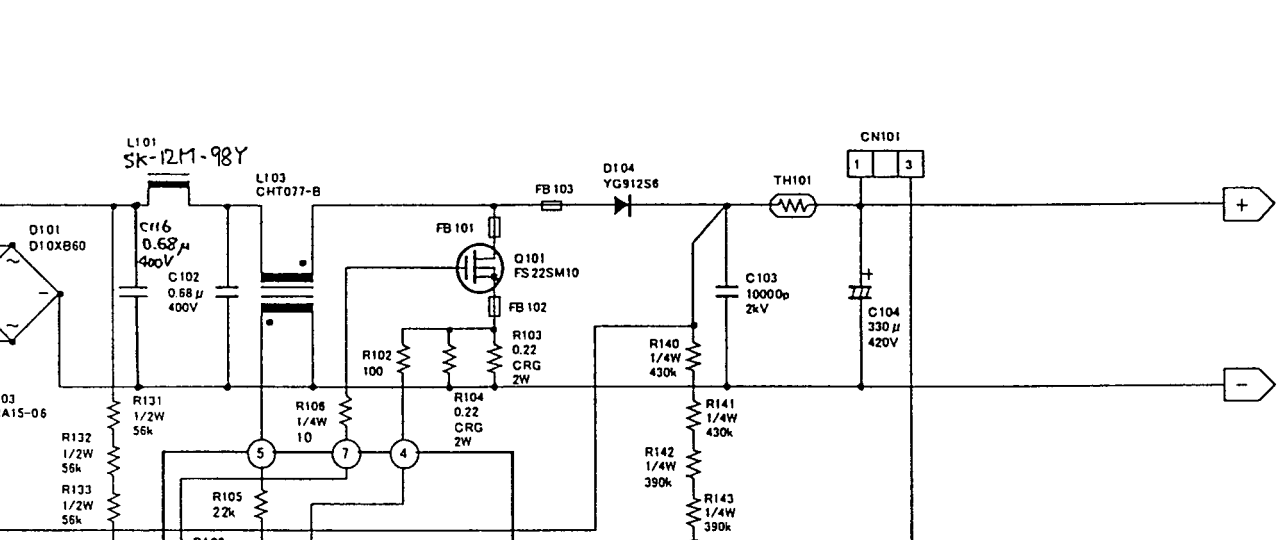

PWB ass'y RGB (1/3)
SECAM.OFF
SECAM.SEL
3LINE
VIDEO.SYNC
VIDEO.H
VIDEO.V
JUDGE
SCLO
SDAO
VIDEO.R.GND
VIDEO.R
VIDEO.G.GND
VIDEO.G
VIDEO.B.GND
VIDEO.B
GND
-5V.ST
GND
+5V.ST
+5V.AD
POWER6
POWER.OFF
MUTE
VOL
V/R
R1/R2
POWER.EX
USB+5V
D-
D+
+5V.AD
+5V.ST
-5V.ST
R1/R2
GND1
RGB.V
RGB.H
REMOTE
MOUSE
TXD
RXD
EI01
FH12-50S-0.5SH
EI51
CPB8354-0211
R093
0
2125
L004
100H
3225
L003
100H
3225
R094
0
2125
RS13
0
RS14
0
RS15
0
CS01
CS02
CS03

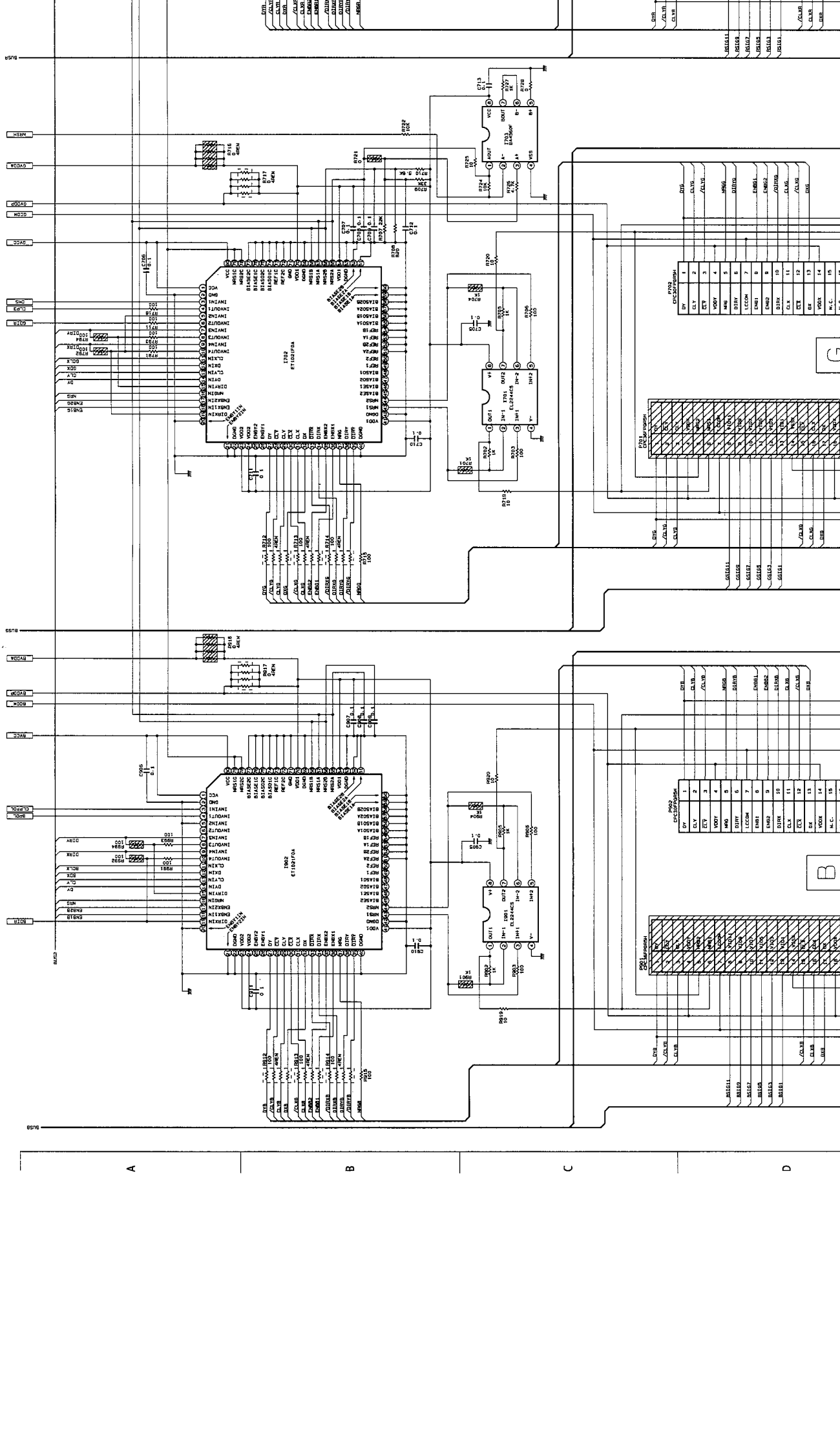

PWB ass'y RGB (2/3)



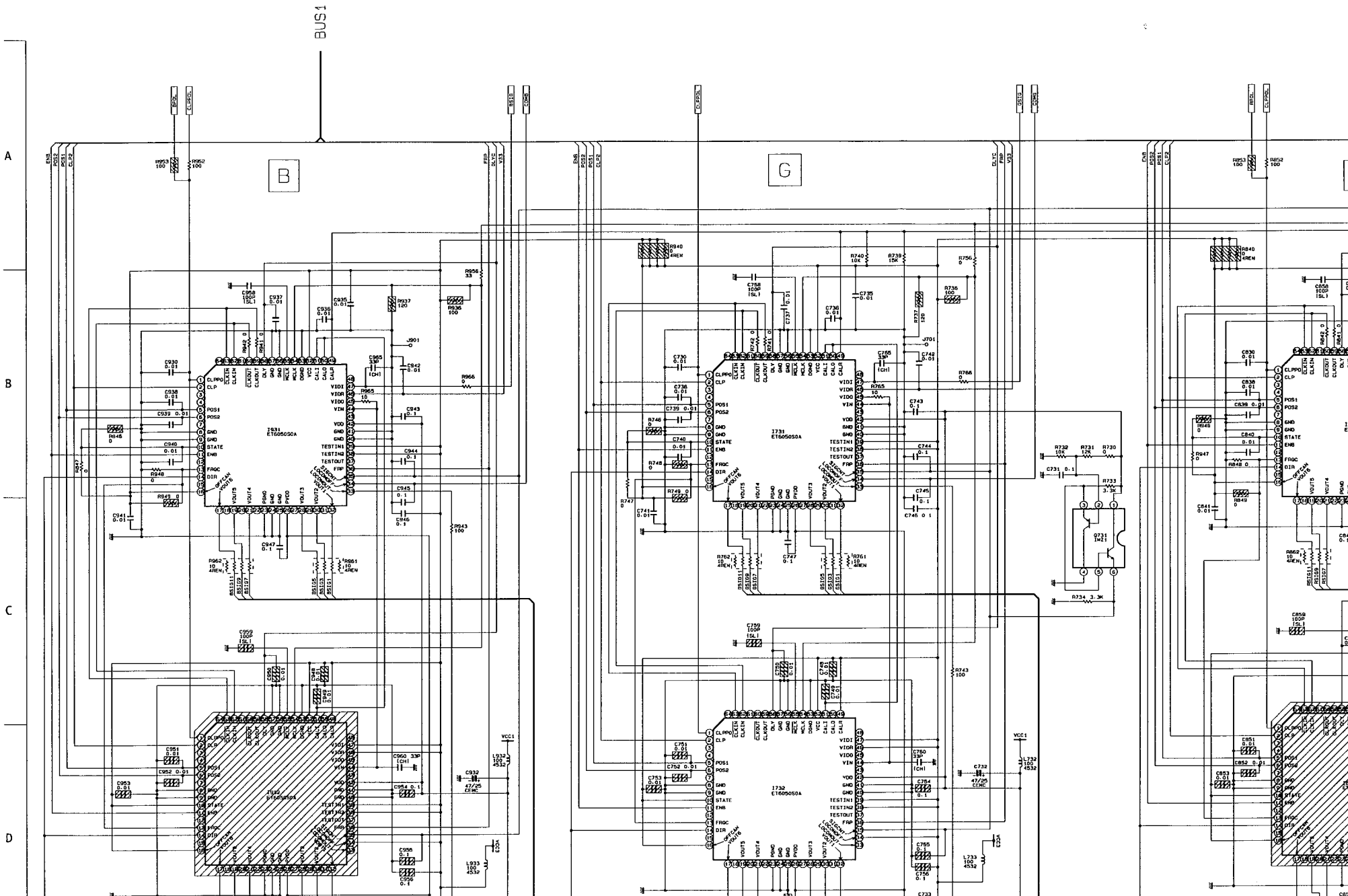


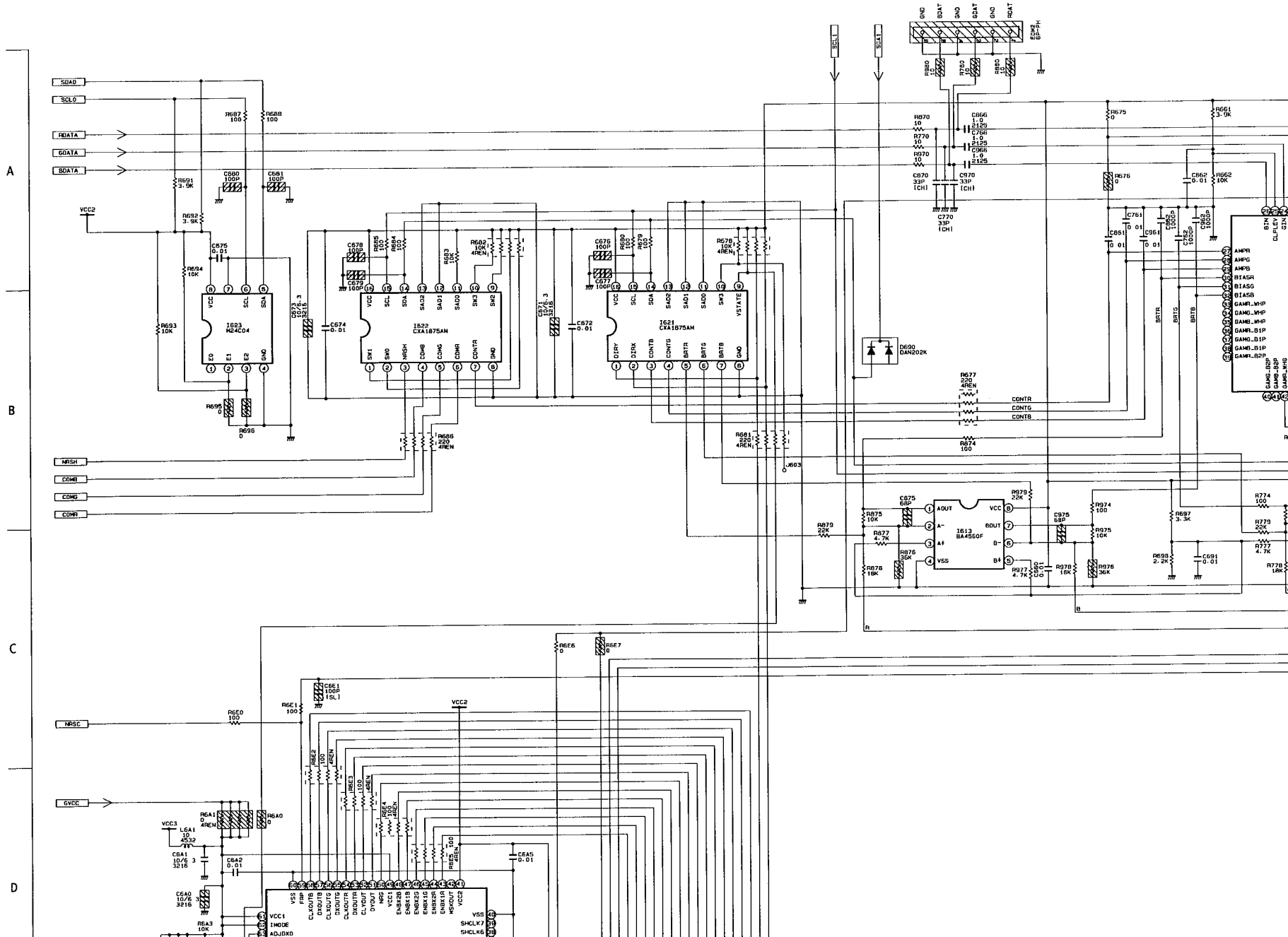
PWB ASS'Y FILTER

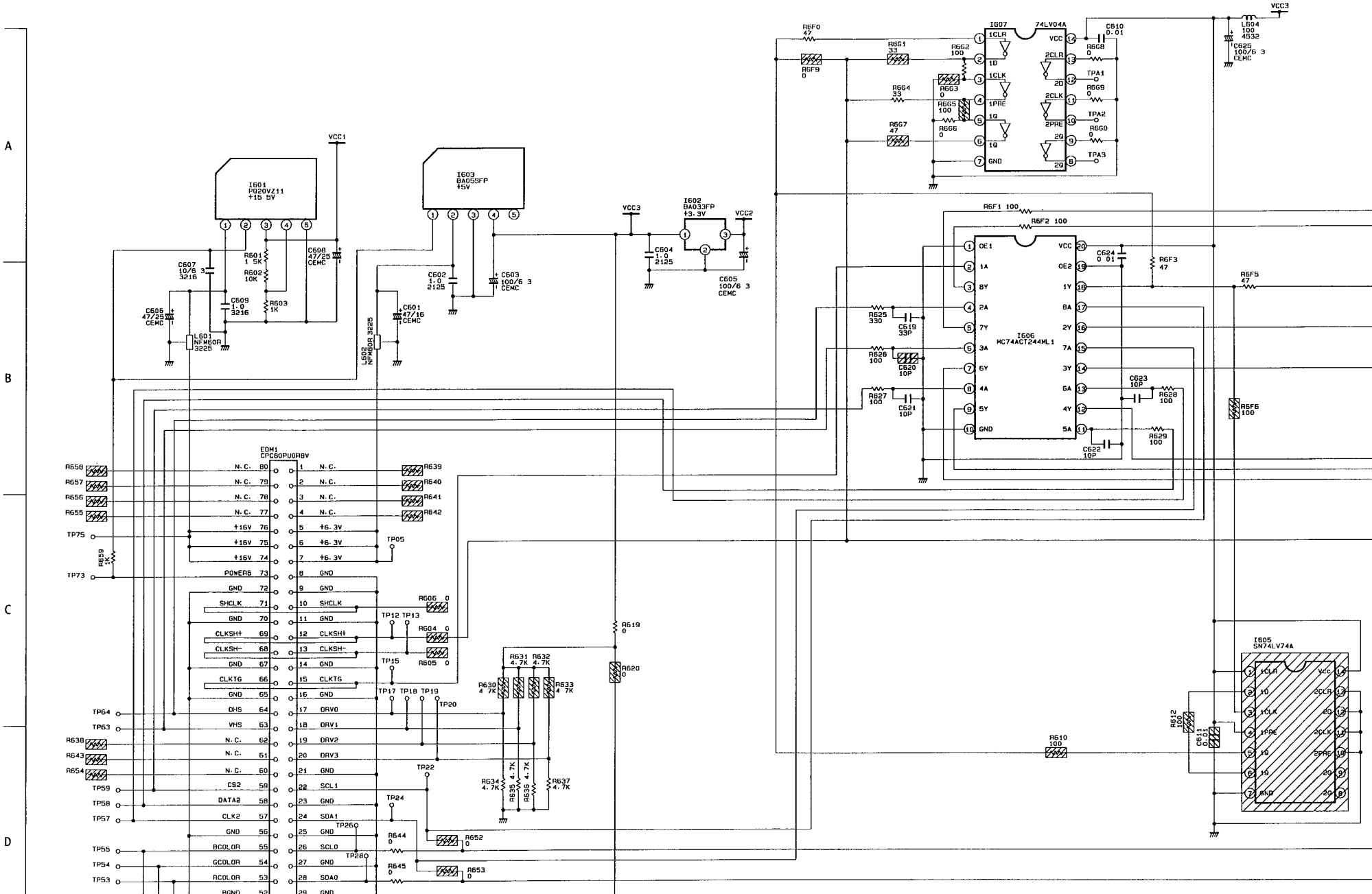


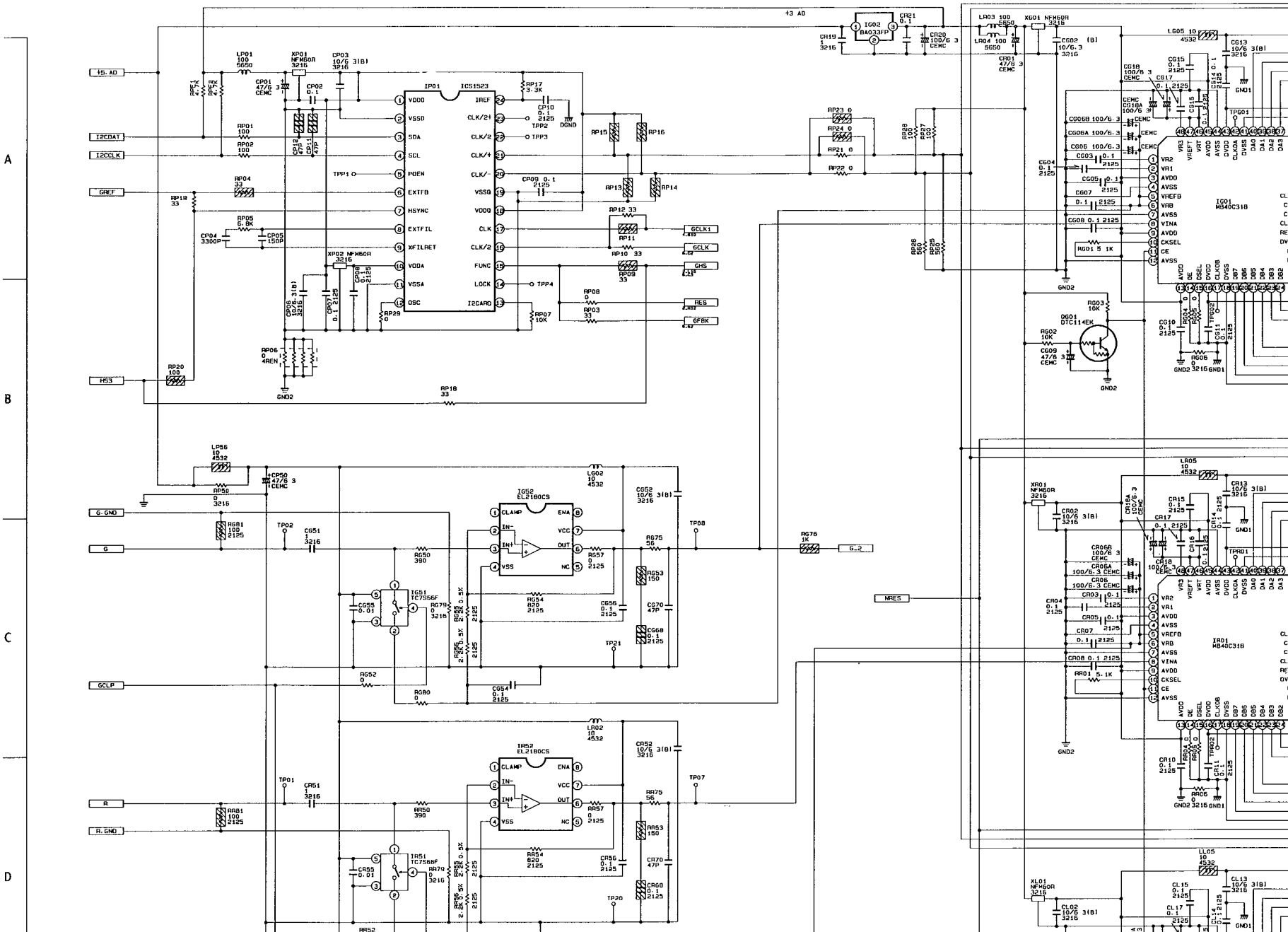

A
B
C
D

CP-S860W
CP-S860E

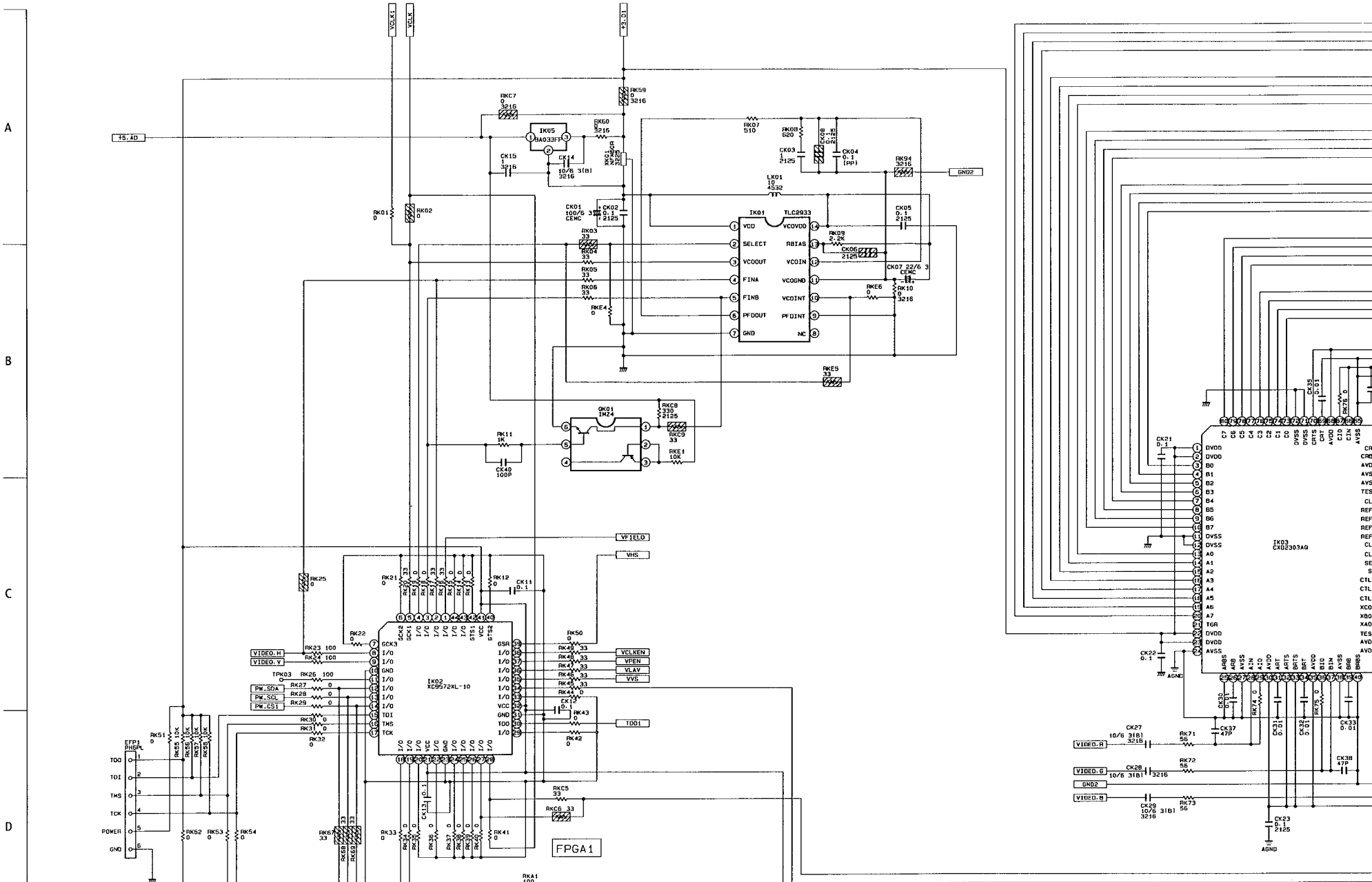


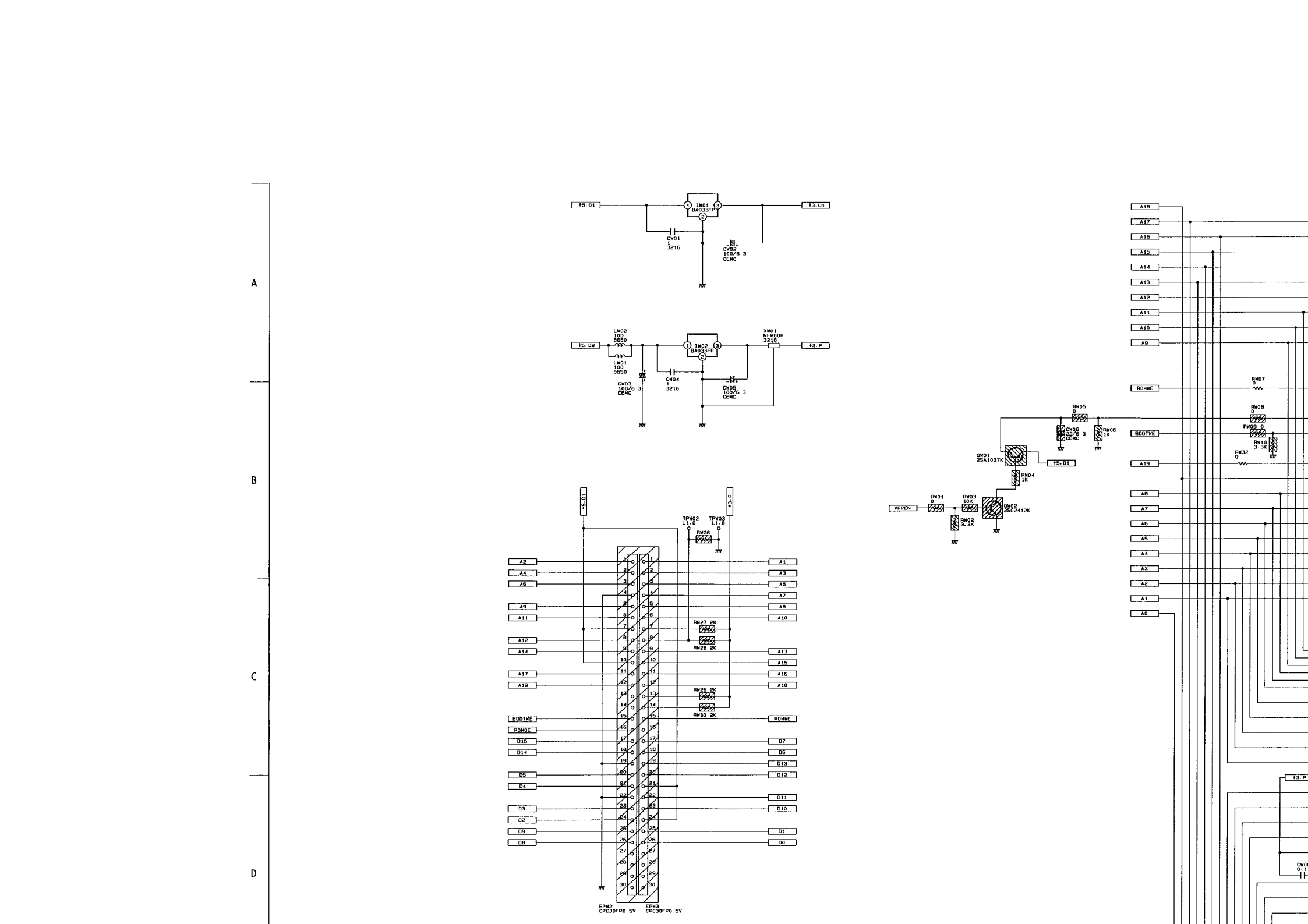

SDAD
SCLD
RDATA
GDATA
BDATA
VCC2
I623 M24C04
I622 CXA1875AM
I621 CXA1875AM
D690 DAN202K
I613 BA4560F
NRSH
CONB
CONG
CONR
NRSC
GVCC
VCC3
SCL1
SDA1
CONTR
CONTG
CONTB
J603

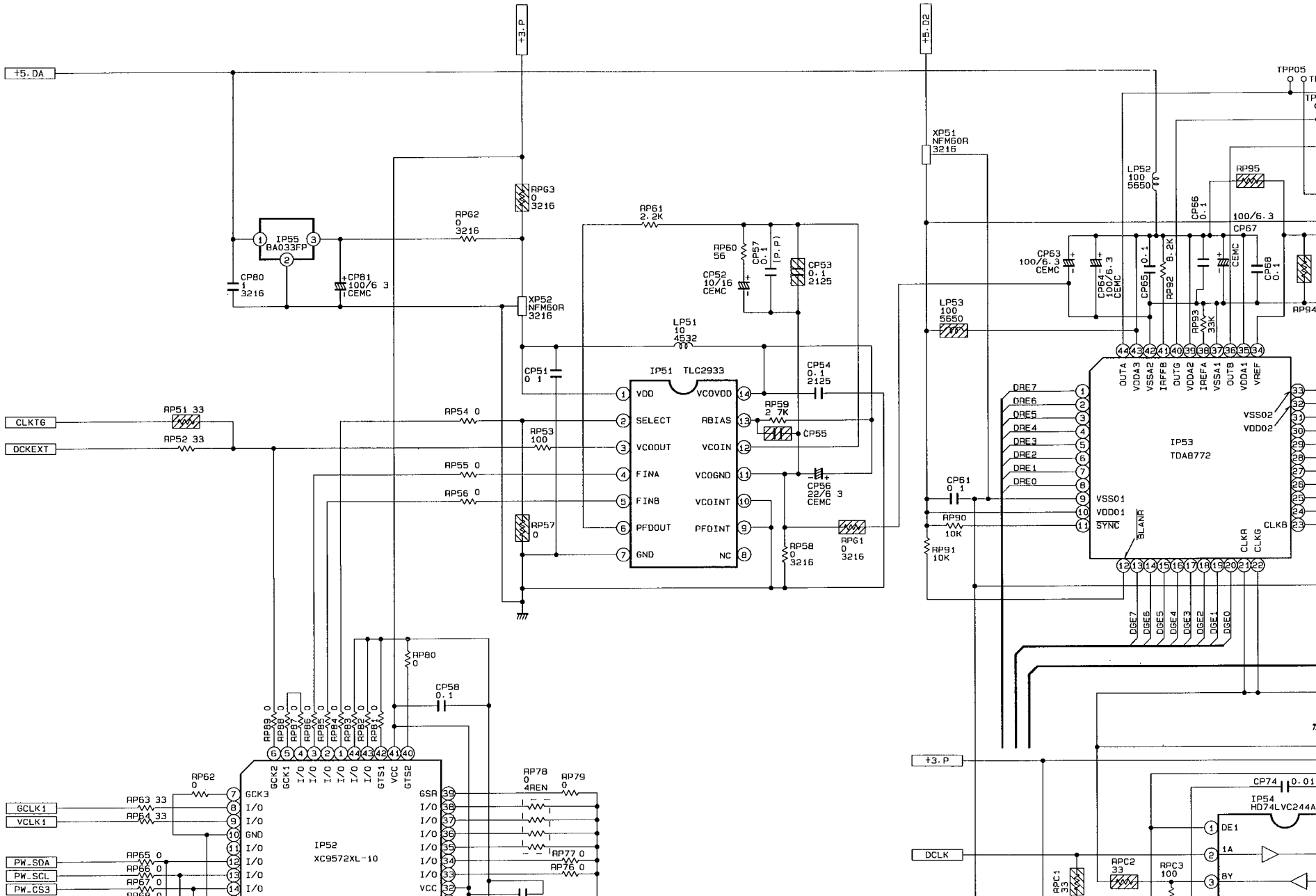

A
B
C
D
I601
PQ20VZ11
+15 5V
I603
BA05SFP
+5V
I602
BA033FP
+3.3V
I607
74LV04A
I606
MC74ACT244ML1
I605
SN74LV74A
EDM1
CPC80PU0R8V
VCC1
VCC2
VCC3
TP75
TP73
TP05
TP64
TP63
TP59
TP58
TP57
TP55
TP54
TP53
TP52
TP51
TP50
TP49
TP48
TP47
TP46
TP45
TP44
TP43
TP42
TP41
TP40
TP39
TP38
TP37
TP36
TP35
TP34
TP33
TP32
TP31
TP30
TP29
TP28
TP27
TP26
TP25
TP24
TP23
TP22
TP21
TP20
TP19
TP18
TP17
TP16
TP15
TP13
TP12
N.C.
+16V
+6.3V
POWER6
GND
SHCLK
CLKSH+
CLKSH-
CLKTG
DHS
VHS
DRV0
DRV1
DRV2
DRV3
CS2
SCL1
DATA2
SDA1
CLK2
SCL0
BCOLOR
GCOLOR
RCOLOR
SDA0
BGND
1CLR
1D
1CLK
1PRE
1Q
2CLR
2D
2CLK
2PRE
2Q
VCC
OE1
OE2
1A
1Y
2A
2Y
3A
3Y
4A
4Y
5A
5Y
6A
6Y
7A
7Y
8A
8Y
TPA1
TPA2
TPA3

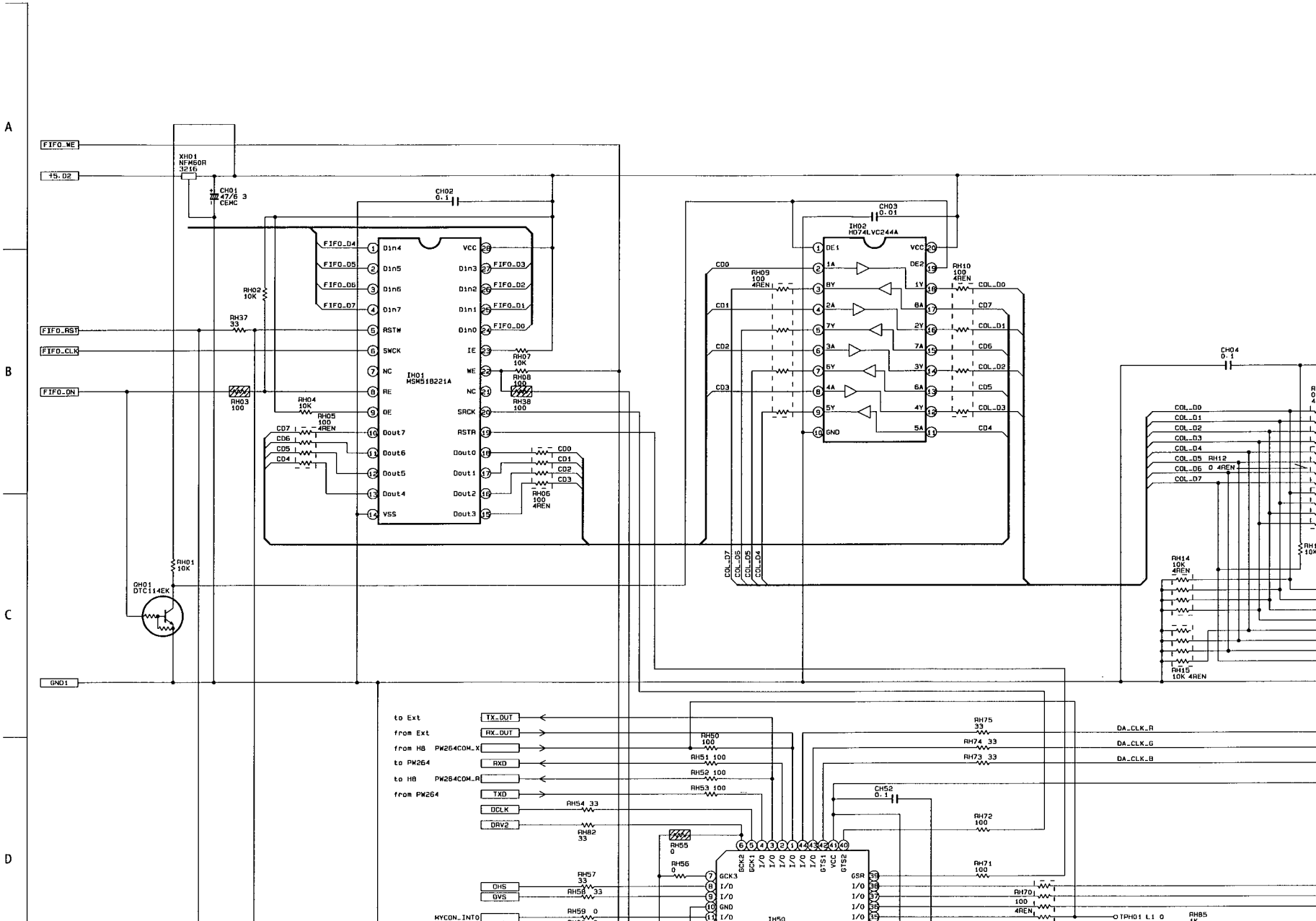

+3 AD
+5. AD
I2CDAT
I2CCLK
GREF
HS3
IP01 ICS1523
VDDD
VSSD
SDA
SCL
PDEN
EXTFB
HSYNC
EXTFIL
XFILRET
VDDA
VSSA
OSC
IREF
CLK/2+
CLK/2
CLK/1
CLK/-
VSSQ
VDDQ
CLK
CLK/2
FUNC
LOCK
I2CADR
GCLK1
GCLK
GHS
RES
GFBK
IG01 MB40C31B
IG02 BA033FP
IG52 EL2180CS
IR52 EL2180CS
IG51 TC7S66F
IR51 TC7S66F
G.GND
G
G_2
R.GND
R
NRES
GCLP
GND1
GND2
A
B
C
D

CP-S860W
CP-S860E

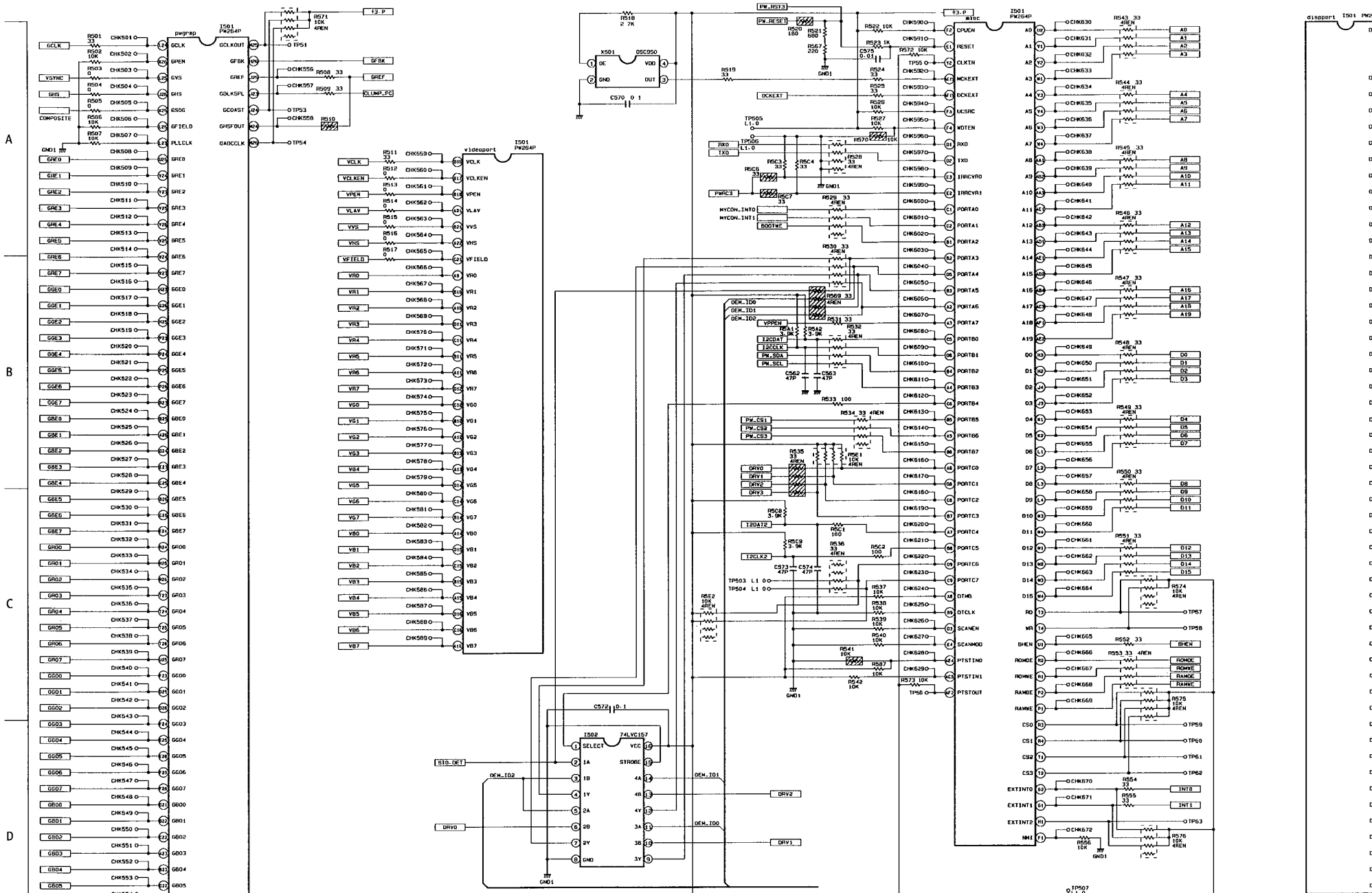


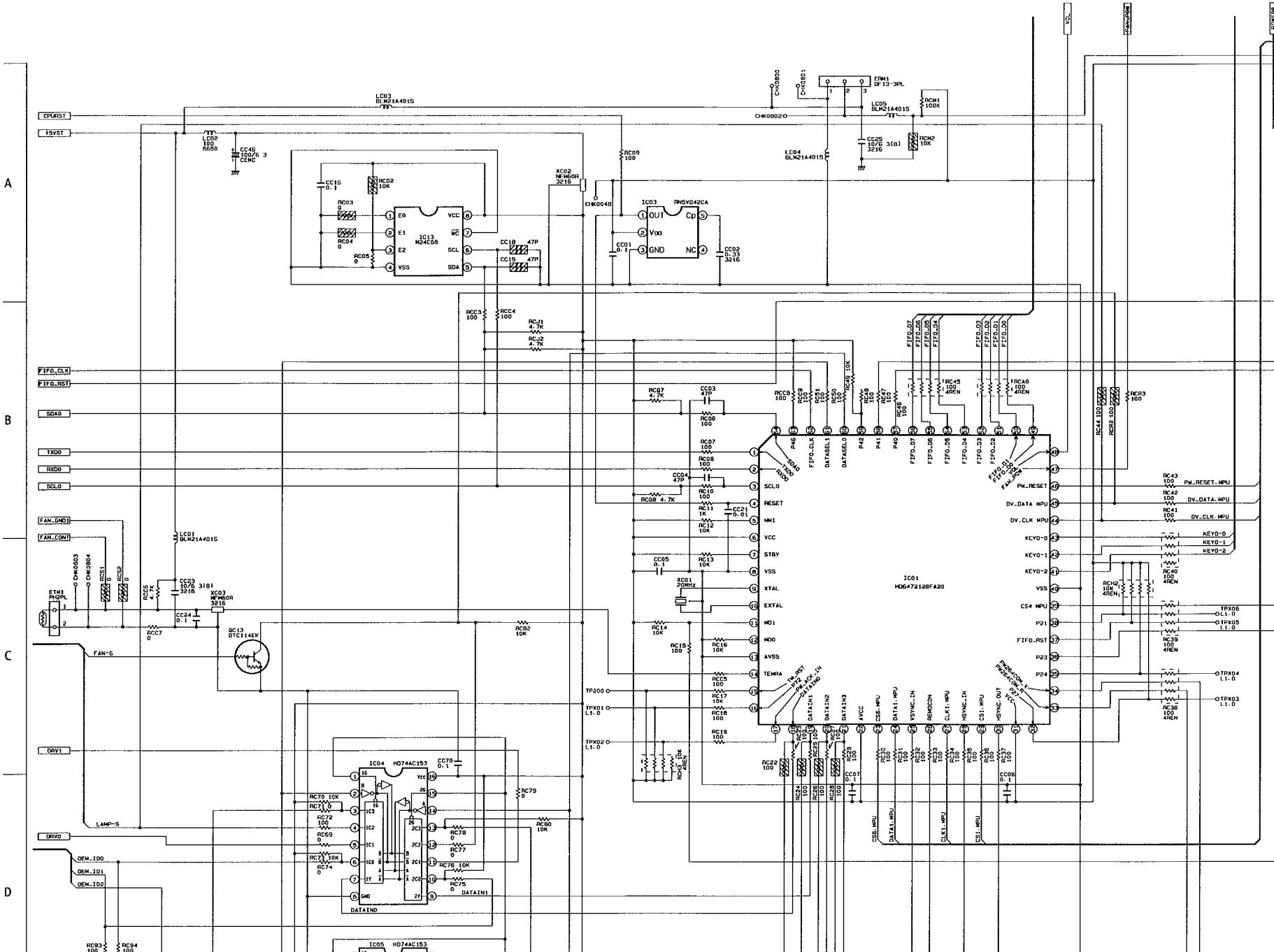

+5.01
IW01 BA033FP
+3.01
CW01 1 3216
CW05 100/6 3 CEMC
LW02 100 5650
+5.02
IW02 BA033FP
XW01 NFM60R 3216
+3.P
LW01 100 5650
CW03 100/6 3 CEMC
CW04 1 3216
CW05 100/6 3 CEMC
+5.01
+3.P
TPW02 L1.0
TPW03 L1.0
RW26
RW27 2K
RW28 2K
RW29 2K
RW30 2K
A2
A4
A6
A9
A11
A12
A14
A17
A19
BOOTWE
ROMOE
D15
D14
D5
D4
D3
D2
D9
D8
A1
A3
A5
A7
A8
A10
A13
A15
A16
ROMWE
D7
D6
D13
D12
D11
D10
D1
D0
EPW2 CPC30FP0 5V
EPW3 CPC30FP0 5V
A18
A17
A16
A15
A14
A13
A12
A11
A10
A9
ROMWE
RW07 0
RW08 0
RW09 0
RW10 3.3K
RW32 0
RW05 0
CW06 22/6 3 CEMC
RW06 1K
BOOTWE
A19
QW01 2SA1037K
+5.01
RW04 1K
VPPEN
RW01 0
RW03 10K
QW02 2SC2412K
RW02 3.3K
A8
A7
A6
A5
A4
A3
A2
A1
A0
+3.P
CW01 0 1


+5.DA
+3.P
+5.D2
IP55 BA033FP
CP80 1 3216
CP81 100/6.3 CEMC
RPG2 0 3216
RPG3 0 3216
XP52 NFM60R 3216
XP51 NFM60R 3216
LP51 10 4532
LP52 100 5650
LP53 100 5650
RP61 2.2K
RP60 56
CP52 10/16 CEMC
CP67 0.1 (P.P)
CP53 0.1 2125
CP54 0.1 2125
CP51 0.1
IP51 TLC2933
VDD
SELECT
VCOOUT
FINA
FINB
PFDOUT
GND
VCOVDD
RBIAS
VCOIN
VCOGND
VCOINT
PFDINT
NC
RP59 2.7K
CP55
CP56 22/6.3 CEMC
RP57 0
RP58 0 3216
RPG1 0 3216
CLKTG
DCKEXT
RP51 33
RP52 33
RP54 0
RP53 100
RP55 0
RP56 0
CP63 100/6.3 CEMC
CP64 100/6.3 CEMC
CP65 0.1
RP92 8.2K
CP66 0.1
RP95
CP67 100/6.3 CEMC
CP68 0.1
RP93 33K
RP94
TPP05
IP53 TDA8772
OUTA
VDDA3
VSSA2
IRFFB
OUTG
VDDA2
IREFA
VSSA1
OUTB
VDDA1
VREF
DRE7
DRE6
DRE5
DRE4
DRE3
DRE2
DRE1
DRE0
VSS01
VDD01
SYNC
BLANK
CLKA
CLKG
CLKB
VSS02
VDD02
CP61 0.1
RP90 10K
RP91 10K
DGE7
DGE6
DGE5
DGE4
DGE3
DGE2
DGE1
DGE0
IP52 XC9572XL-10
RP80 0
CP58 0.1
RP62 0
RP63 33
RP64 33
RP65 0
RP66 0
RP67 0
RP68 0
RP78 0 4REN
RP79 0
RP77 0
RP76 0
GCLK1
VCLK1
PW_SDA
PW_SCL
PW_CS3
CP74 0.01
IP54 HD74LVC244A
DCLK
RPC2 33
RPC3 100
RPC1 33

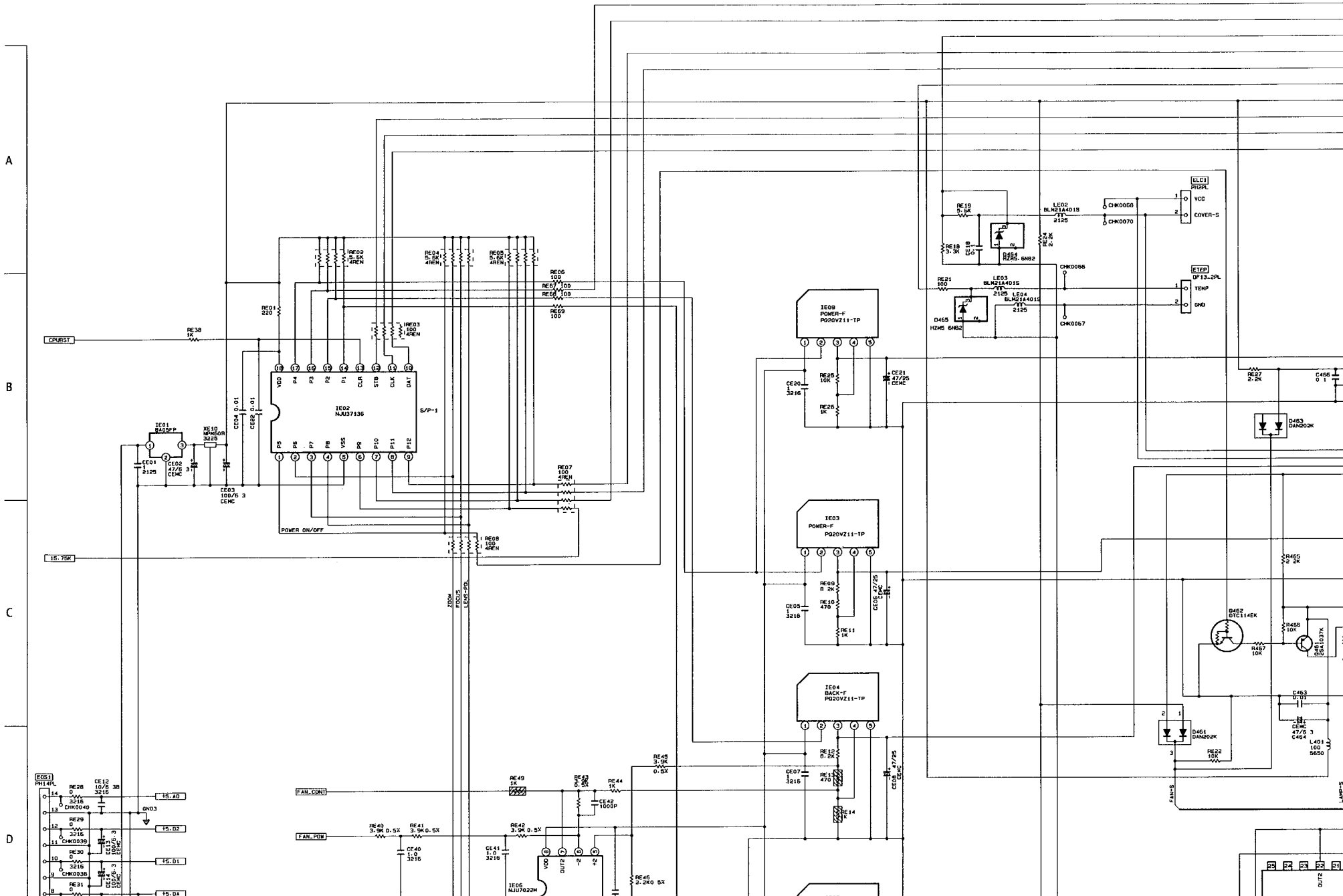

FIFO_WE
+5.D2
XH01 NFM60R 3216
CH01 47/6.3 CEMC
CH02 0.1
IH01 MSM518221A
FIFO_D4
FIFO_D5
FIFO_D6
FIFO_D7
FIFO_RST
FIFO_CLK
FIFO_DN
RH02 10K
RH37 33
RH03 100
RH04 10K
RH05 100 4REN
RH07 10K
RH08 100
RH38 100
RH06 100 4REN
RH01 10K
QH01 DTC114EK
GND1
CD7
CD6
CD5
CD4
CD0
CD1
CD2
CD3
IH02 HD74LVC244A
CH03 0.01
RH09 100 4REN
RH10 100 4REN
COL_D0
COL_D1
COL_D2
COL_D3
COL_D4
COL_D5
COL_D6
COL_D7
CH04 0.1
RH12 0 4REN
RH14 10K 4REN
RH15 10K 4REN
to Ext
from Ext
from H8 PW264COM_X
to PW264
to H8 PW264COM_R
from PW264
TX_OUT
RX_OUT
RXD
TXD
DCLK
DRV2
RH50 100
RH51 100
RH52 100
RH53 100
RH54 33
RH82 33
RH55 0
RH56 0
RH57 33
RH58 33
DHS
DVS
MYCON_INTO
RH59 0
RH75 33
RH74 33
RH73 33
RH72 100
RH71 100
RH70 100 4REN
CH52 0.1
DA_CLK_R
DA_CLK_G
DA_CLK_B
TPH01 L1 0
RH85

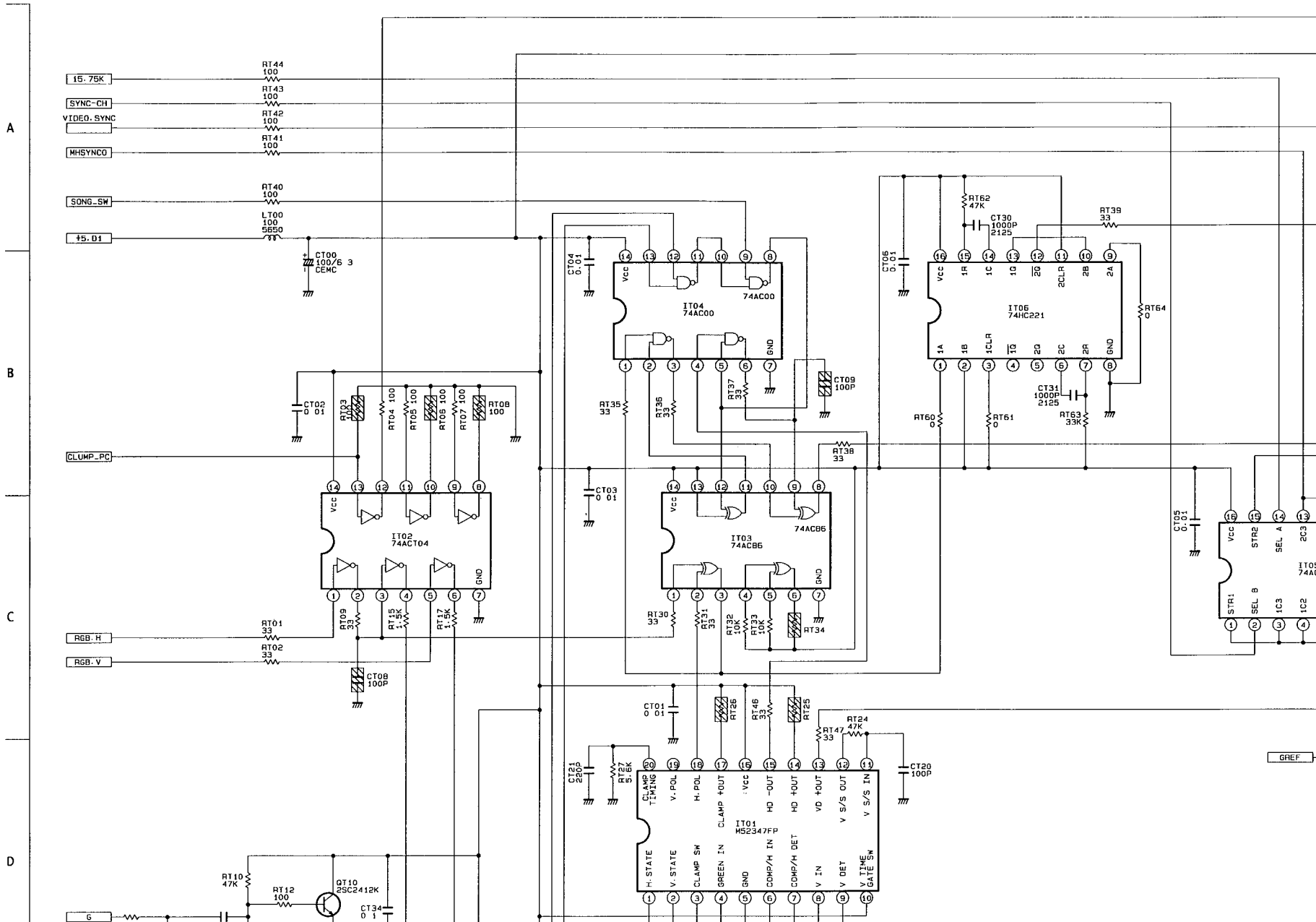
CP-S860W
CP-S860E



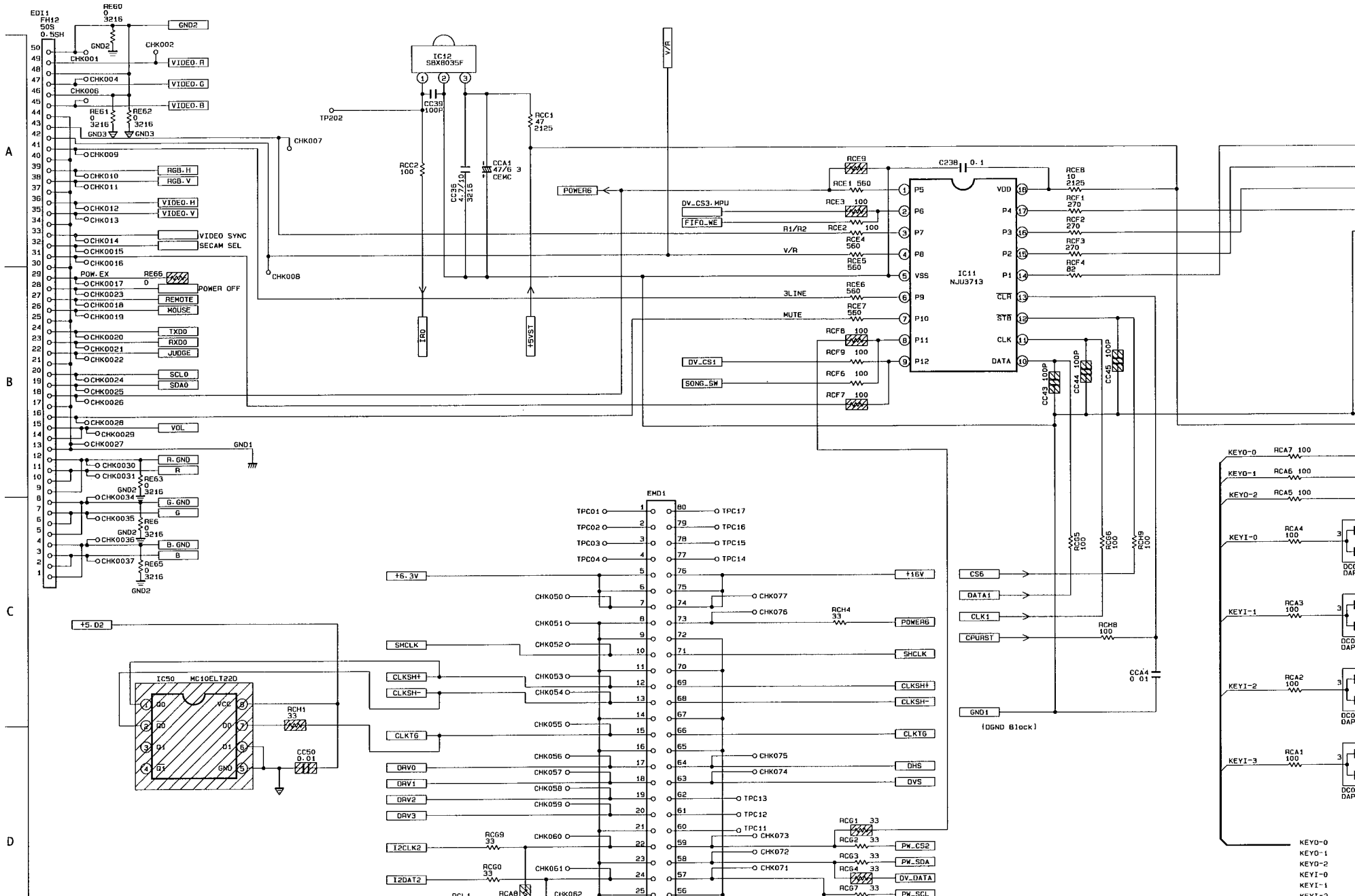

CPURST
I5VST
FIFO_CLK
FIFO_RST
SDA0
TXD0
RXD0
SCL0
FAN_GND1
FAN_CONT
FAN-S
DRV1
LAMP-S
DRV0
OEM_ID0
OEM_ID1
OEM_ID2
IC01
M06472128FA20
IC03
RN5VD42CA
IC04
HD74AC153
IC05
HD74AC153
IC13
M24C08
XC01
20MHz
XC02
XC03
DTC114EK
ETM1
PH2PL
FAN1
DF13-3PL
VDL
FAN+POW
PW_RESET
DV_DATA
DV_CLK
KEY0-0
KEY0-1
KEY0-2
FIFO_RST
TPX06
TPX05
TPX04
TPX03
TP200
TPX01
TPX02
DATAIN0
DATAIN1
A
B
C
D

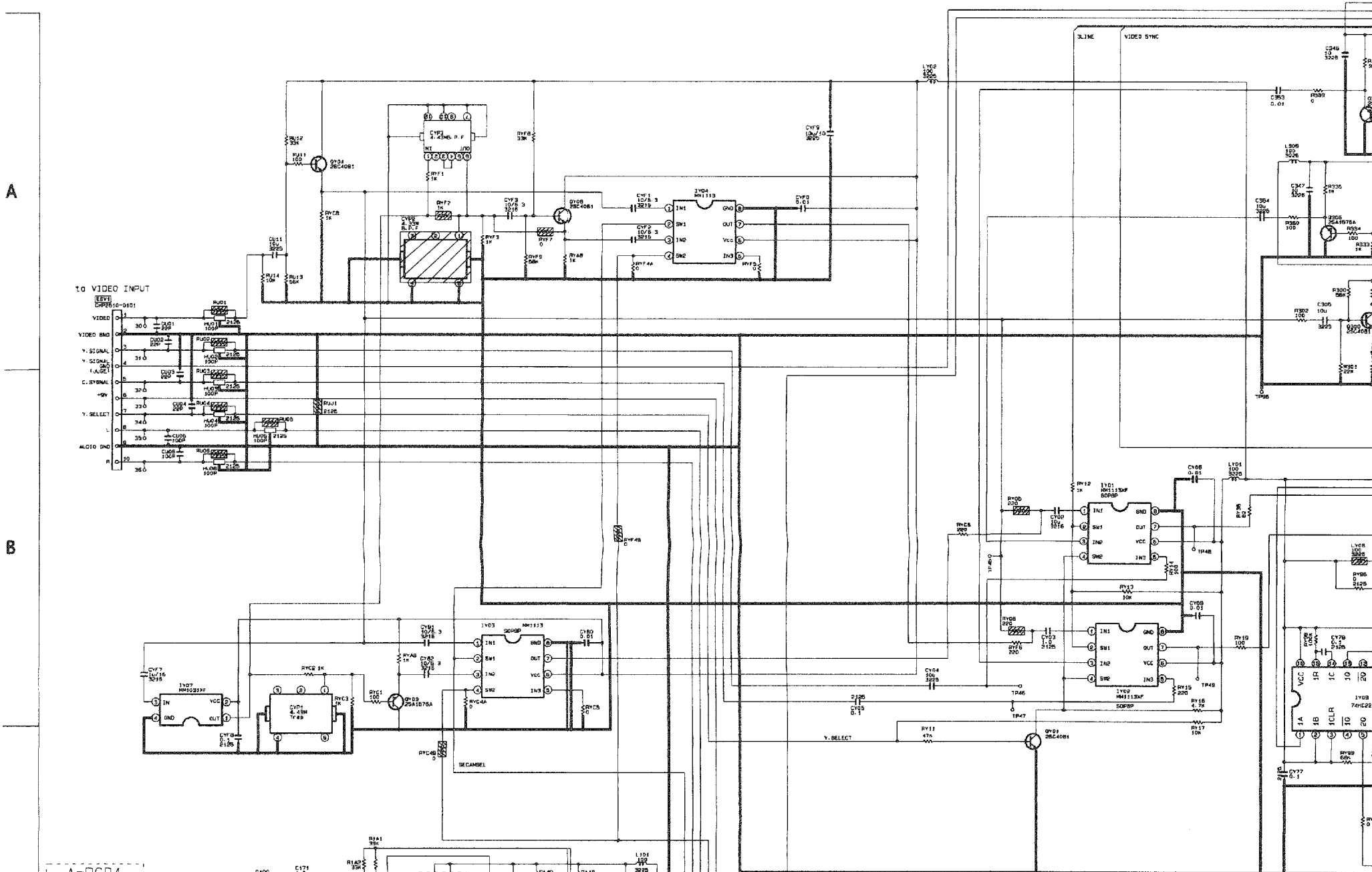
CP-S860W
CP-S860E



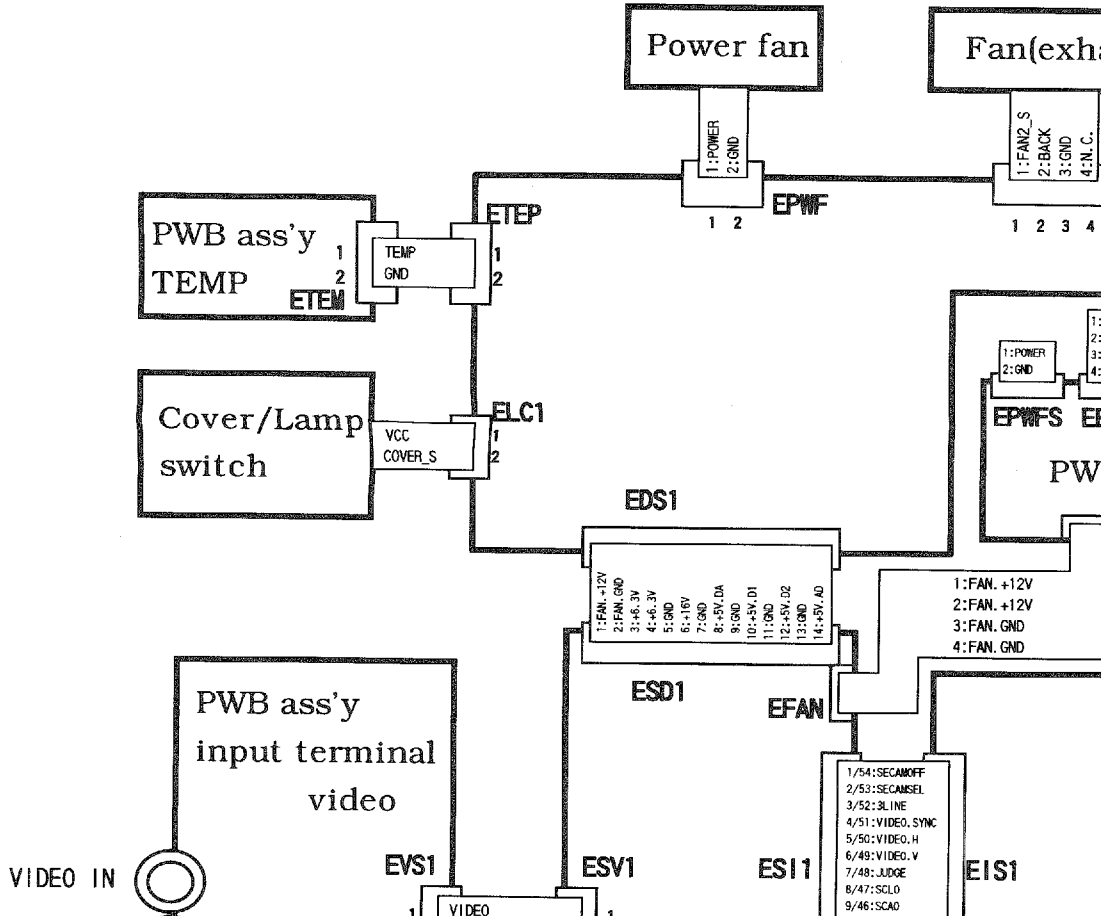

15.75K
SYNC-CH
VIDEO.SYNC
MHSYNCO
SONG_SW
+5.01
CLUMP_PC
RGB.H
RGB.V
G
GREF
RT44 100
RT43 100
RT42 100
RT41 100
RT40 100
LT00 100 5650
CT00 100/6.3 CEMC
CT02 0.01
RT03 33
RT04 100
RT05 100
RT06 100
RT07 100
RT08 100
CT08 100P
RT01 33
RT02 33
RT09 33
RT15 1.5K
RT17 1.5K
IT02 74ACT04
CT04 0.01
IT04 74AC00
RT35 33
RT36 33
RT37 33
CT09 100P
CT03 0.01
IT03 74AC86
RT30 33
RT31 33
RT32 10K
RT33 10K
RT34
RT38 33
CT06 0.01
RT62 47K
CT30 1000P 2125
RT39 33
IT06 74HC221
RT64 0
RT60 0
RT61 0
CT31 1000P 2125
RT63 33K
CT05 0.01
STR2
SEL A
STR1
SEL B
CT01 0.01
RT26
RT46 33
RT25
RT24 47K
RT47 33
CT21 220P
RT27 5.6K
CT20 100P
IT01 M52347FP
CLAMP TIMING
V. POL
H. POL
CLAMP +OUT
VCC
HD -OUT
HD +OUT
VD +OUT
V S/S OUT
V S/S IN
H. STATE
V. STATE
CLAMP SW
GREEN IN
GND
COMP/H IN
COMP/H DET
V IN
V DET
V TIME GATE SW
RT10 47K
RT12 100
QT10 2SC2412K
CT34 0.1

CP-S860W
CP-S860E

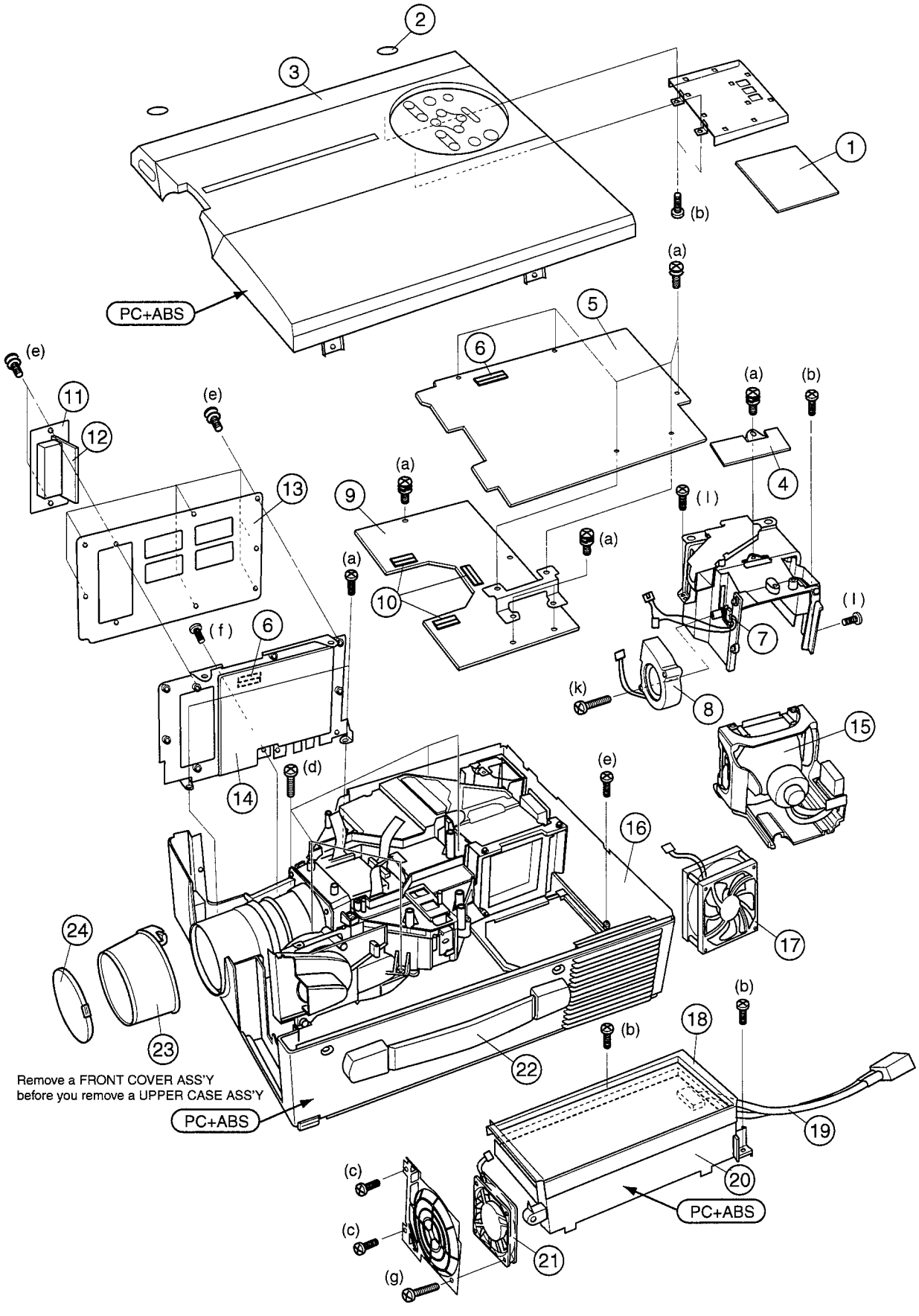


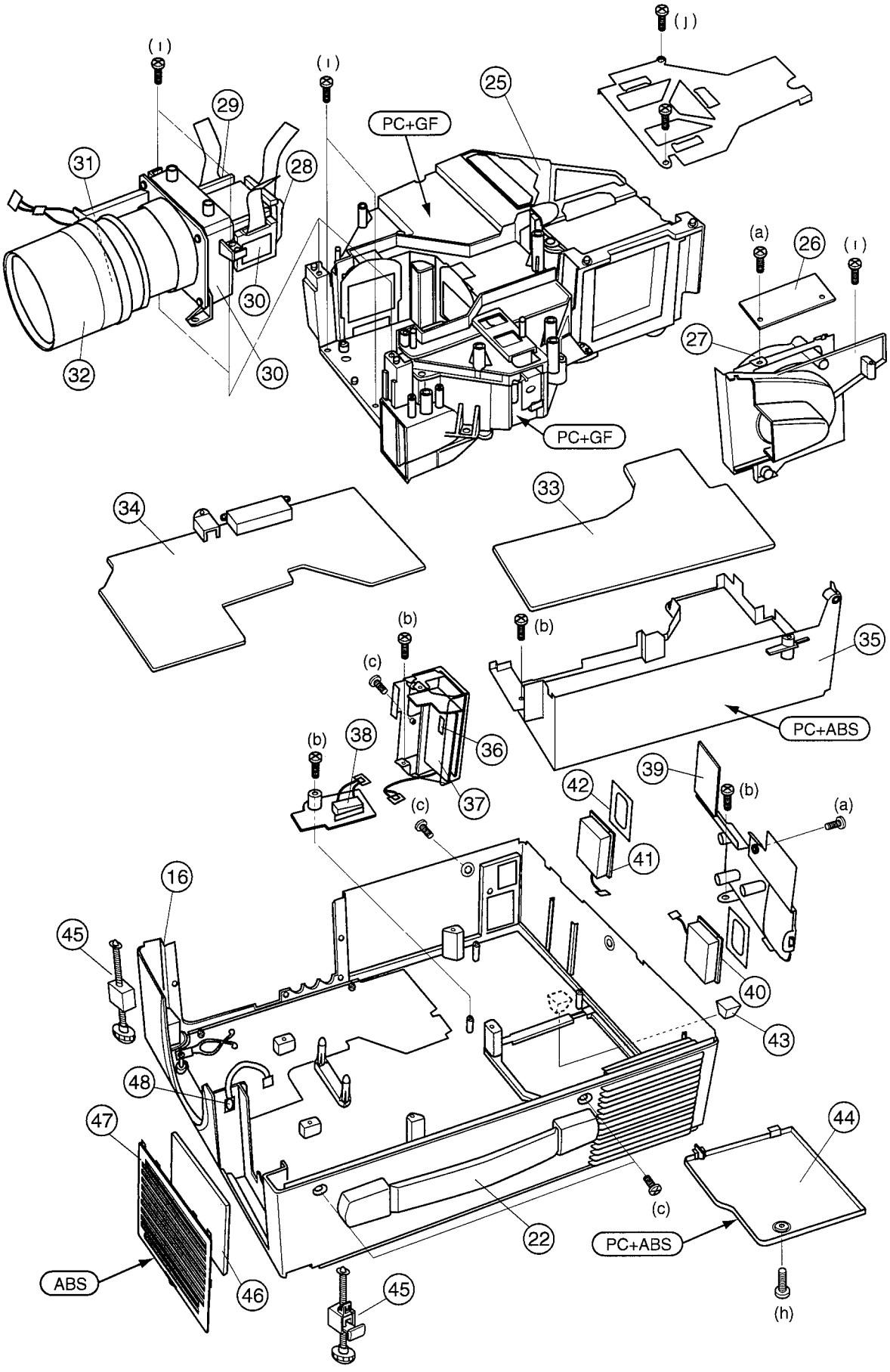

A
B
to VIDEO INPUT
VIDEO
VIDEO GND
Y. SIGNAL
Y. SIGNAL GND (JACK)
C. SYGNAL
+9V
Y. SELECT
L
AUDIO GND
R
3LINE
VIDEO SYNC
SECAMSEL
Y. SELECT

10. Connector connection diagram



11. Disassembly diagram




(l)
(l)
(l)
(l)
(a)
(b)
(b)
(b)
(b)
(c)
(c)
(c)
(c)
(h)
25
26
27
28
29
30
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
45
46
47
48
16
22
PC+GF
PC+GF
PC+ABS
PC+ABS
ABS

12. Replacement Parts list

PRODUCT SAFETY NOTE Components marked with a ⚠ have special characteristics important to safety. Before replacing any of there components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PARTS NO.	DESCRIPTION	SYMBOL NO.	PARTS NO.	DESCRIPTION
1	JP03565	PWB ASS'Y OPERATION	34	JP03562	PWB ASS'Y SIGNAL
2	MU00841	FOOT P3	35	NJ03661	PWB HOLDER
3	QD08177	UPPER CASE ASS'Y	36	2722448	FUSE
4	JP03566	PWB ASS'Y TEMPERATURE	37	BZ03411	LINE FILTER
5	JP03593B	PWB ASS'Y MAIN	38	FH00182	LIMIT SWITCH(LAMP DOOR)
6	EA00282R	CPC50 CONNECTOR	39	JP03594	PWB ASS'Y R/C.
7	FH00181	LIMIT SWITCH(LAMP)	40	GK00564	SPEAKER (L)
8	GS00422	DC FAN(LAMP)	41	GK00565	SPEAKER (R)
9	JP03592	PWB ASS'Y DRIVE	42	MU01021	SP SHEET P3
10	EA00564R	CPC30 CONNECTOR	43	PE00111	RUBBER FOOT
11	MD05552	VIDEO PANEL	44	QD07992	LAMP COVER ASS'Y
12	JP03563	PWB ASS'Y VIDEO	45	QJ00621	ADJUST FOOT
13	MD05402	I/O DECO PANEL	46	MU00831	AIR FILTER
14	JP03564A	PWB ASS'Y RGB	47	QD07972	FILTER COVER ASS'Y
15	DT00231	P3S LAMP UNIT ASS'Y	48	AZ00251	THERMISTER
16	QD07748	BOTTOM CASE ASS'Y			(only CP-S860W)
17	GS00362	DC FAN(EXHAUST)		EV00631	POWER SUPPLY CORD(UL/CSA TYPE)
18	MN02212	BALAST COVER		EV00641	POWER SUPPLY CORD(CONTINENTAL TYPE)
19	HA00621	POWER UNIT(BALLAST)		EV00341	POWER SUPPLY CORD(UK TYPE)
20	NJ03651	BALAST HOLDER		EW06031	3 CONDUCTOR VIDEO/AUDIO CABLE
21	GS00232	DC FAN(POWER)		EW05015	RGB-D CABLE(15PIN MALE TO 15PIN MALE)
22	PV00241	HANDLE		EY00362	APPLE MAC ADAPTER
23	QD08291	FRONT COVER ASS'Y		HL01241	REMOTE CONTROL UNIT
24	QD08012	LENS CAP		EW02753	PS/2-2 MOUSE CABLE W/CORE
25	UE06031	DICHROIC OPTICS UNIT		EW02743	ADB-2 MOUSE CABLE W/CORE
26	JP03597	PWB ASS'Y FAN		EW02733	SERIAL-2 MOUSE CABLE W/CORE
27	GS00371	DC FAN(INTAKE)		NX05741	CLEANING TOOL FOR DUST
28	-	LCD MODULE ASS'Y G W/LNS PRISM(REPAIR)		UX06391	LCD/LENS PRISM ASS'Y
29	-	LCD MODULE ASS'Y R W/LNS PRISM(REPAIR)			
30	-	LCD MODULE ASS'Y B W/LNS PRISM(REPAIR)			
31	GP00251	DC MOTOR ASS'Y			
32	-	LENS P3 ASS'Y(REPAIR)			
33	HA00611	POWER UNIT(CIRCUIT)			

The kind of the screw

(a) M3X8 with washer
(b) 3X12 tapping screw
(c) 4X8 DT screw (black)
(d) 3X16 tapping screw
(e) M3X10 with lock-washer
(f) 3X8 DT screw(black)
(g) 3X25 tapping screw
(h) 4X10 black
(i) 3X8 tapping screw
(j) 2.6X5 tapping screw
(k) 3X25 tapping screw
(l) 3X10 tapping screw

HITACHI

CP-S860W YK No. 0496E Digital Media Systems Division
CP-S860E

QR42341

Printed in Japan (M)